



**PROJECT IDENTIFICATION FORM (PIF)**

**PROJECT TYPE:** Full-sized project

**TYPE OF TRUST FUND:** SCCF

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**PART I: PROJECT IDENTIFICATION**

<b>Project Title:</b>	Climate Change Adaptation in the Eastern Caribbean Fisheries Sector		
<b>Country(ies):</b>	St Vincent and the Grenadines, Grenada, Dominica, St Lucia, Trinidad and Tobago, Antigua and Barbuda, St Kitts and Nevis	<b>GEF Project ID:<sup>1</sup></b>	5667
<b>GEF Agency(ies):</b>	FAO	<b>GEF Agency Project ID:</b>	621550
<b>Other Executing Partner(s):</b>	Caribbean Regional Fisheries Mechanism (CRFM), Western Central Atlantic Fishery Commission (WECAFC), Caribbean Network of Fisherfolk Organizations (CNFO), University of the West Indies (UWI), fisheries and environment agencies and ministries in participating countries, private sector, CARIBSAVE and The nature Conservancy (TNC) <sup>2</sup> .	<b>Submission Date:</b>	January 24, 2014
<b>GEF Focal Area (s):</b>	Climate Change	<b>Project Duration (months):</b>	60
<b>Name of parent program (if applicable):</b> <ul style="list-style-type: none"> <li>• For SFM/REDD+ <input type="checkbox"/></li> <li>• For SGP <input type="checkbox"/></li> <li>• For PPP <input type="checkbox"/></li> </ul>	N/A	<b>Agency Fee (\$):</b>	518,700

**A. FOCAL AREA STRATEGY FRAMEWORK<sup>3</sup>:**

Focal Area Objectives	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-Financing (\$)
CCA -1	SCCF	1,160,000	13,850,000
CCA-2	SCCF	2,600,000	9,000,000
CCA-3	SCCF	1,700,000	12,000,000
<b>Total project costs</b>		SCCF	5,460,000
			34,850,000

<sup>1</sup> Project ID number will be assigned by GEFSEC.

<sup>2</sup> A complete list of acronyms can be found in Annex I to this PIF

<sup>3</sup> Refer to the reference attached on the Focal Area Results Framework and LDCF/SCCF Framework when completing table A.

## B. PROJECT FRAMEWORK

<b>Project Objective:</b> To Increase Resilience and Reduce Vulnerability to Climate Change Impacts in the Eastern Caribbean Fisheries Sector, through introduction of adaptation measures in fisheries management and capacity building of fisherfolk and aquaculturists.						
<b>Project Component</b>	<b>Grant Type<sup>4</sup></b>	<b>Expected Outcomes</b>	<b>Expected Outputs</b>	<b>Trust Fund</b>	<b>Indicative Grant Amount (\$)</b>	<b>Indicative Co-financing (\$)</b>
<b>Component 1.</b> Assess biophysical, social and economic impacts of climate change and sea level rise on Caribbean fisheries	TA	<p>1.1 Improved understanding and awareness of vulnerability of the fisheries sector and strengthened regional policy for adaptation.</p> <p>Indicator: Information on vulnerability of the fisheries sector disseminated to target stakeholder groups (men + women), national authorities and regional agencies and bodies.</p>	<p>Output 1.1: Regional technical capacity for understanding and communicating climate change impacts on fisheries strengthened. Indicator 1.1: Climate change information incorporated in the agenda of annual CRFM Ministerial Council meetings and biannual WECAFC sessions.</p> <p>Output 1.2: Collaborations developed for monitoring and analysis of oceanographic data for fisheries purposes. Indicator 1.2: Memoranda of Understanding (MoU) signed and implemented between regional partners (e.g. CRFM, UWI, CCCCC, WECAFC) to help facilitate integration of scientific findings in management.</p> <p>Output 1.3: Downscaled climate models for biophysical parameters developed. Indicator 1.3: Models designed and used by at least 3 institutions in the participating countries and by the regional partners.</p> <p>Output 1.4: Econometric models of social and economic impacts developed. Indicator 1.4: Models designed and used by at least 3 institutions in the participating countries and by the regional partners.</p> <p>Output 1.5: Participatory data collection and planning through pilot projects implemented in focus countries (e.g. MARSIS methodology). Indicator 1.5: At least 2 pilot projects implemented in participating countries</p>	SCCF	800,000	5,400,000

<sup>4</sup> TA includes capacity building and research and development.

<p><b>Component 2.</b> Increase use of existing communication technologies for fishers and develop an innovative ICT platform for climate variability related risk and vulnerability reduction and greater information sharing between fishers and policy-makers (e.g. smart phone app.).</p>	TA	<p>2.1 Programmes for increasing fisherfolk resilience to climate change and climate variation developed that strengthen Safety at Sea, through increased use of VHF, GPS and the development and dissemination of a smart phone app.</p> <p>Indicator: Extent to which safety-at-sea measures are adopted by fisherfolk (score of 1 to 5).</p>	<p>Output 2.1: Early warning needs assessment and basic training provided in line with IMO convention for safety at sea. Indicator 2.1: Reports of training and manuals/materials used. Output 2.2: Fisherfolk resilience increased through increased uptake of ICT technologies that allow rapid communication on climatic/weather events, including the use of VHF and GPS promoted through training programmes and small grants (linkages with Output 3 of Component 3). Indicator 2.2: Percentage of fishing vessels using VHF and GPS in participating countries. Output 2.3: Smart phone application developed, tested and disseminated with fishers for improved access to weather data, adaptation information, information on risk reduction and fishery policies and regulations. Indicator: App made available on-line for free download by fisherfolk.</p>	SCCF	900,000	6,000,000
<p><b>Component 3.</b> Empower fisherfolk organisations in order to promote governance and co-management systems that are based on an understanding of ecosystems, climate change and variations, partnerships, inclusiveness, equity and sustainable livelihoods.</p>	TA	<p>3.1 Governance and co-management systems enhanced through the expansion of regional knowledge networks, the implementation of participatory data collection and planning pilot projects and improved technical and business skills for climate change and variation vulnerable groups (e.g. youth, women).</p> <p>Indicator: Extent to which fisherfolk organizations are actively involved/ participating in (co-) management of the fisheries resources at national level as well as research, planning and evaluation processes (score of 1 to 5).</p>	<p>Output 3.1: Institutional capacity of CNFO &amp; CRFM strengthened and information dissemination mechanisms for communicating climate change adaptation messages (ideas, technologies, etc) strengthened with improved online forums, website, press releases, public meetings and annual conferences. Indicator 3.1: Evaluation of value of meetings, conferences and website, etc of CRFM by users (score of 1 to 5). Output 3.2: Exchange programmes on adaptive technologies and resilience for fishers developed and implemented by CNFO/ GCFI/CRFM/WECAFC/ CERMES/OECS. Indicator 3.2: Number of fishers benefiting from the exchange programme. Output 3.3: Small-grant programme for fisherfolk organisations established to support introduction of</p>	SCCF	1,200,000	4,450,000

			<p>adaptive technologies at community level in focus countries, implemented by CNFO.</p> <p>Indicator 3.3: Simple and clear guidelines for accessing grants under the programme and number of beneficiaries.</p> <p>Output 3.4: Training in business skills, insurance schemes, coping with loss, rapid response and boat hauling.</p> <p>Indicator 3.4: Reports of training and manuals/materials used and type and level of insurance schemes developed and introduced.</p>			
<p><b>Component 4.</b> Strengthen existing fisheries management capacity and mainstream 'adaptation thinking' into management practices.</p>	TA	<p>4.1 Fisheries management capacity increased and "ecosystem approach to fisheries" including climate change considerations incorporated into management practices.</p> <p>Indicator 1: Extent to which climate change issues are mainstreamed into national and regional fisheries management plans (% of plans with CC adaptation measures).</p> <p>Indicator 2: Percentage of fisheries being formally managed.</p>	<p>Output 4.1: Lessons learned and best practices shared from Components 1, 2 and 3.</p> <p>Indicator 4.1: Type and level of measures incorporated in fisheries management plans that are based on information collected and capacity built under this project.</p> <p>Output 4.2: Strengthened multi-sectoral planning and management. using an EAF approach.</p> <p>Indicator 4.2: Sectoral strategies and management plans that incorporate formal collaborative mechanisms (e.g. partnerships, joint committees) with other "stakeholder" sectors (e.g. tourism, coastal zone, environment, agriculture).</p> <p>Output 4.3: New policy directives supported for "mainstreaming adaptation" and investment in the fisheries sector for regional endorsement by CRFM and WECAFC.</p> <p>Indicator 4.3: Policy directives and regional strategies and investment opportunities endorsed by WECAFC and CRFM that include specific investment budgets for climate change adaptation interventions (including adaptations in fisheries infrastructure and coastal protection) in the fisheries sector.</p> <p>Output 4.4: Adaptive fisheries management practices tested and promoted in focus</p>	SCCF	1,400,000	13,255,000

			<p>countries.</p> <p>Indicator 4.4: adaptive fisheries management practices implemented in all participating countries.</p> <p>Output 4.5: Awareness programmes and policy briefs developed to increase focus on the Ecosystem Approach to Fisheries (EAF).</p> <p>Indicator 4.5: Percentage of countries that have incorporated the EAF in their fisheries management planning processes (type and level).</p> <p>Output 4.6: The Code of Conduct for Responsible Fisheries and the associated “Rights-based” approach to climate change resilient sustainable fisheries management promoted among fishers through linkages with Components 2 and 3.</p> <p>Indicator 4.6: Rights Based approaches introduced to promote climate resilient sustainable fisheries management at regional and national level in at least 2 countries.</p>			
<p><b>Component 5.</b> Develop aquaculture demonstration and training programme for food-security and alternative livelihoods.</p>	TA	<p>5.1. "Climate proof" aquaculture promoted through demonstration and training centres.</p> <p>Indicator 1: % change in fish production by aquaculture in participating countries.</p> <p>Indicator 2: No. and type of aquaculture institutions that carry out training and demonstration programmes that include climate change resilient practices.</p>	<p>Output 5.1: Existing aquaculture centres strengthened.</p> <p>Indicator 5.1: At least 2 national level demonstration/training facilities upgraded with modern technologies that are climate change and variability proof.</p> <p>Output 5.2: New aquaculture demonstration and training centre(s) established.</p> <p>Indicator 5.2: At least 1 new aquaculture training and demonstration centre established which has climate change adaptive capacity to minimize exposures to climate variability to serve the participating countries with high quality services.</p> <p>Output 5.3: Training and outreach programmes initiated.</p> <p>Indicator 5.3: No. of private sector aquaculturists and aquaculture extensionists trained on technical aquaculture subjects that include climate change</p>	SCCF	900,000	4,002,500

			adaptation measures and adaptive technologies. Output 5.4: Inter-regional technical exchanges established, particularly with the Aquaculture Network for the Americas. Indicator 5.4: Type of climate change adaptation technologies transferred and introduced in the Eastern Caribbean region.			
<b>Sub-Total</b>					5,200,000	33,107,500
<b>Project management Cost (PMC)<sup>5</sup></b>				SCCF	260,000	1,742,500
<b>Total project costs<sup>4</sup></b>					5,460,000	34,850,000

### C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, (\$)

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
GEF Agency	FAO	Grant	600,000
GEF Agency	FAO	In-kind	400,000
National Government	Govt. of Trinidad and Tobago	In-kind	19,500,000
National Government	Govt. of St Lucia	In-kind	2,250,000
National Government	Govt. of St Kitts and Nevis	In-kind	1,250,000
National Government	Govt. of St Vincent and the Grenadines	In-kind	1,500,000
National Government	Govt. of Grenada	In-kind	1,500,000
National Government	Govt. of Antigua and Barbuda	In-kind	3,250,000
National Government	Govt. of Dominica	In-kind	1,300,000
Executing partner	CRFM	In-kind (various projects)	400,000
Executing partner	Caribsave	In-kind (various projects)	2,700,000
Executing (lead) agency	WECAFC	In-kind	200,000
<b>Total Co-financing</b>			34,850,000

### D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA(S) AND COUNTRY<sup>1</sup>

GEF Agency	Type of Trust Funds	Focal Area	Country Name/ Global	Grant Amount (\$) (a)	Agency Fee (\$) (b) <sup>2</sup>	Total (\$) c=a+b
FAO	SCCF	Climate Change	Regional	5,460,000	518,700	5,978,700
<b>Total Grant Resources</b>				5,460,000	518,700	5,978,700

<sup>1</sup> In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table

<sup>2</sup> Indicate fees related to this project.

<sup>5</sup> To be calculated as percent of subtotal

**E. PROJECT PREPARATION GRANT (PPG)<sup>6</sup>**

Please check on the appropriate box for PPG as needed for the project according to the GEF Project Grant:

	<u>Amount Requested (\$)</u>	<u>Agency Fee for PPG (\$)<sup>7</sup></u>
• No PPG required		
• (Upto) \$50k for projects up to & including \$ 1 million		
• (Upto) \$100k for projects up to & including \$ 3 million		
• (Upto) \$150k for projects up to & including \$ 6 million	150,000	14,250
• (Upto) \$200k for projects up to & including \$ 10 million		
• (Upto) \$300k for projects above \$ 10 million		

\* USD 150 000 is being requested for project preparation because of the significant costs of doing project preparation in 7 countries and at the regional level. The multi-country approach requires extensive coordination efforts and bringing partners together for various regional workshops and meetings during the preparation to ensure regional ownership and commitment to the final project design.

**PPG AMOUNT REQUESTED BY AGENCY (IES), FOCAL AREA(S) AND COUNTRY(IES) FOR MFA AND/OR MTF PROJECT ONLY**

Type of Trust Funds	GEF Agency	Focal Area	Country Name/ Global	PPG (\$) (a)	Agency Fee (\$) (b)	Total (\$) c=a+b
SCCF	FAO	Climate Change	Regional (Caribbean)	150,000	14,250	164,250
<b>Total Grant Resources</b>				150,000	14,250	164,250

**PART II: PROJECT JUSTIFICATION<sup>8</sup>**

**A. PROJECT OVERVIEW**

**A.1. Project description.**

**1) the global environmental problems, root causes and barriers that need to be addressed**

The Eastern Caribbean region is characterized by a cool-dry winter/hot-wet summer climate regime. Peak rainfall occurs in the latter half of the year for most Caribbean islands, coinciding with peak hurricane activity. The presence of surface, mid and upper level troughs and the passage of easterly waves, tropical depressions, storms and hurricanes then give rise to the rainfall. Global phenomena such as the El Niño Southern Oscillation (ENSO) contribute to variability in rainfall in the Eastern Caribbean. An increasing trend in water surface temperatures has been observed in the Caribbean historical records over the last decades. Analysis of observed tropical cyclones in the Caribbean and wider North Atlantic Basin showed a dramatic increase since 1995.

Recent climate change and variability assessments by experts of the Caribbean Community Climate Change Centre (CCCCC), in close collaboration with partner agencies, concluded that:

1. Sea levels are likely to continue to rise on average during the century around the small islands of the Caribbean Sea.
2. All Caribbean islands are very likely to warm during this century. The warming is likely to be somewhat smaller than the global annual mean warming in all seasons.

<sup>6</sup> On exceptional basis, PPG amount may differ upon detailed discussion and justification with the GEFSEC.

<sup>7</sup> PPG fee percentage follows the percentage of the GEF Project Grant amount requested.

<sup>8</sup> Part II should not be longer than 5 pages

3. Summer rainfall in the Caribbean is very likely to decrease in the vicinity of the Greater Antilles but changes elsewhere and in winter are uncertain.
4. It is likely that intense tropical cyclone activity will increase (but tracks and the global distribution are uncertain).
5. Short term variability in rainfall patterns (e.g. as caused by ENSO events) will likely continue. The prevailing warmer conditions may make the convection associated with the short lived events more intense. In general, climate change will produce a warmer, dryer (in the mean) region with more intense hurricanes, and possibly more variability.

The Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME+) Strategic Action Programme (SAP), which was formally endorsed in 2013 by the Eastern Caribbean States notes that “Unsustainable fisheries, habitat degradation and pollution have been identified as the three most important problems impacting the societal benefits obtained from these ecosystems. These impacts may become exacerbated due to climate change. Most fisheries are fully or over-exploited, and illegal, unreported and unregulated (IUU) fishing still remains an important issue in the region. Habitat degradation and pollution severely impact the region’s tourism potential and the sustainability of its’ fisheries, and increase the region’s vulnerability to climate variability and change. Habitat degradation and pollution affect all ecosystem types but are especially evident in the coastal zone.”

The fisheries sector production in the Caribbean region has declined some 40% over the last two decades. An FAO assessment of the exploitation levels of commercially harvested fish stock in the world revealed that the Western Central Atlantic region, to which the Eastern Caribbean islands belong, is the most overexploited region in the world in terms of fisheries exploitation levels.

Some 55% of the commercially harvested fisheries stocks in this region are overexploited or depleted and an estimated 41% of the stocks are fully exploited at present. This means that there is very limited scope for development of the fisheries sector. The Caribbean region is the only region in the world where not any regional fisheries management plan is in-place, not even for a single commercially important species (e.g. spiny lobster or queen conch), despite years of discussion and negotiation.

In the Small Island Developing States (SIDS) of the Eastern Caribbean the fisheries sector is very important for livelihoods, income, food security, poverty reduction and export earnings generation. The fisheries sector is largely focused on production and does currently not take into account climate variability and climate change. National level fisheries management plans are generally absent or are restricted to a few fisheries that are of commercial value. As a consequence most fisheries and the fish stocks targeted are not managed properly. There is a serious gap in governance and management of the fisheries sector in most of the Eastern Caribbean countries. Overexploitation of spiny lobster, queen conch, Nassau grouper, billfish and coral reef fish stocks, fishing in Vulnerable Marine Ecosystems (VMEs) and other unsustainable practices continue. Consequently, habitats are destructed, reef biodiversity is reducing and the ecosystems services provision of coastal waters is falling.

#### Root Causes:

While many of the root causes for climate change and climate variability originate from outside the Caribbean region, the consequences can be severe for the region and for the fisheries sector in particular. Many of the findings of the recently released Intergovernmental Panel on Climate Change (IPCC) report “Climate Change 2013: The Physical Science Basis. Twelfth Session of IPCC Working Group I, Stockholm, Sweden. September 27, 2013”, are highly relevant for the Caribbean region. Changes at global level (e.g. water temperature rise, frequency or intensity of heavy precipitation, sea level rise) are generally highly relevant and visible in the Eastern Caribbean.

Root causes for climate change and variability related problems in the fisheries sector of the region include: (i) *insufficient awareness and involvement of fishers and fisheries decision makers;* (ii) *inadequate understanding and access to data and information/knowledge on climate change impacts and adaptation measures for the sector;* (iii) *limited human and financial resources available in the Eastern Caribbean SIDS;* (iv) *inadequate national level fisheries and aquaculture governance;* and (v) *limited regional level cooperation on climate change adaptation in the fisheries sector in the Caribbean.*



Regional workshops (Panama and Jamaica) and a range of national consultations in the Eastern Caribbean held in 2012 have contributed to identifying these root causes and the strategies and approaches that could be used to address them. The FAO/CRFM/WECAFC/CDEMA/CCCCC “Strategy and Action Plan for disaster risk management and climate change adaptation in fisheries and aquaculture in the CARICOM region”, which has been endorsed at regional level in 2013, provides a comprehensive action plan to address the root causes.

### Barriers:

The Eastern Caribbean region is geopolitically complex and fragmented and the transboundary nature of the marine ecosystems and living resources, including fisheries resources, make it difficult to manage the resources sustainably at national level alone. Efforts made at (sub-) regional level require national level implementation, but national level follow-up is generally weak because of the above mentioned root causes.

At the level of the Eastern Caribbean sub-region, the main barriers to adaptation of the fisheries sector to climate change and variability relate to the above root causes. The five components of this project each address specific barriers to implementation of climate change adaptation measures in the sector.

### Barrier 1: Insufficient understanding and awareness of climate change vulnerability of the fisheries sector (Comp. 1)

- Insufficient data and information on climate change vulnerability and impact on fisheries
- Inadequate data collection and analysis systems and support for developing such systems
- Inadequate climate change models for biophysical parameters of use to the fisheries sector
- Lack of appropriate econometric models to measure social and economic impacts of climate change and variation in the fisheries sector
- Limited regional cooperation between fisheries, climate change and disaster management institutions

### Barrier 2: Limited fisherfolk resilience to climate change and variation (Comp. 2)

- Lack of early warning needs assessments among fisherfolk and fisherfolk communities
- Lack of integration of climate change/variability adaptation measures in Safety-at-Sea capacity building efforts
- Limited uptake of ICT technologies for early warning by fisherfolk
- Inadequate direct access of fishers to weather data, adaptation information and information on risk reduction in fisheries
- Insufficient information and experience sharing among fisherfolk about climate variability risks and vulnerability reduction

### Barrier 3: Ineffective mainstreaming of climate change adaptation in fisheries governance (Comp. 3 +4)

- Inadequate capacity of fisherfolk organizations to effectively engage in management, monitoring and enforcement of fisheries
- Inadequate institutional capacity within national fisheries administrations to deal with cross-sectoral climate change issues
- Insufficient capacity within (sub-)regional institutions to effectively guide and oversee introduction of climate change adaptation strategies and approaches in sub-regional and national fisheries management
- Insufficient incentives to improve and/or change current management practices
- Lack of practical examples and lessons learned of climate change adaptation in fisheries management
- Insufficient effective stakeholder involvement in fisheries management/ limited implementation of the ecosystem approach to fisheries
- Inadequate governance frameworks for introducing co-management and rights-based approaches to aquatic resources and fisheries management
- Lack of opportunities and mechanisms to share and exchange information on adaptive technologies and resilience among fishers
- Inadequate access of fishers to risk management tools and measures (insurance, finance, mitigation training, rapid response actions)

### Barrier 4: Highly vulnerable aquaculture investments in the Eastern Caribbean (Comp. 5)

- Inadequate attention to climate change and variability in current aquaculture development
- Current aquaculture farms are located in “high risk” areas
- Insufficient understanding about climate change adaptation opportunities in aquaculture management
- Limited awareness and knowledge of climate proof aquaculture technologies and systems

## **2) baseline scenario and any associated baseline projects**

### **Fisheries sector production and employment**

The combined annual capture fisheries production of the 7 participating Eastern Caribbean SIDS was estimated in 2001 at 77 000 tonnes. This production was reduced to 26 000 tonnes in 2006 and has since remained around that level. In 2009 the total recorded capture fisheries production of the 7 countries was 26 139 tonnes, of which 53% was landed by Trinidad and Tobago and 16% by St Vincent and the Grenadines. The other countries landed less than 6% each. In 2009/2010 the Caribbean region as a whole imported over 250 000 tonnes of fish and fisheries products, a growth of 100 000 tonnes compared to 2000/2001. At the same time the exports of fish and fisheries products by the Caribbean countries has been stable around 50 000 tonnes annually over the last 15 years. The employment in the fisheries sector is around 2% of the workforce in most islands in the Caribbean, but a bit higher in the small island states participating in this project. The total primary sector employment in fisheries in the participating countries was estimated at around 20 000 in the mid 2000s and has since slightly increased according to recent estimations from some of the countries. The fisheries sector in the 7 participating countries is estimated to be a main contributor to the livelihoods of some 100 000 people. Employment in fish wholesale, retail, processing and recreational fisheries is probably underestimated and/or not fully accounted for in this figure.

### **Food security and poverty alleviation**

Nearly all fish caught by the fleets of small-scale fishers is sold in the domestic markets. Fish consumption seems to have decreased slightly in recent years as the availability of fresh fish in the domestic markets has slightly reduced. Per capita consumption varies between 14 kg and 36 kg per year in the Eastern Caribbean countries. Fish is therefore an important item in the diet of the population on the islands and contributes significantly to food security. In this respect it is noteworthy that the fisheries sector has started to play a role in the UN’s Zero Hunger programme in the Caribbean and that fish is incorporated in school feeding programmes in several of the participating countries.

Recent CARICOM studies show that between 1 and 5 percent of the population in the 7 islands is considered poor and that between 6 and 30 percent are considered vulnerable. Poverty and vulnerability levels in the capture fisheries sector appear to be relatively high compared to many other sectors a Diagnostic Study to Determine Poverty Levels in CARICOM Fisheries Communities (2012) carried out for CRFM revealed. In short, the fisheries sector is of significant social and economic importance in the Eastern Caribbean countries. It is a challenge to reduce the negative impact of non-sustainable fishing practices and non-managed fishing on the aquatic environment and aquatic biodiversity in these countries, while ensuring employment and income for fishers communities also for future generations.

### **Fish stocks and fisheries management**

In the Eastern Caribbean states, the fisheries decision makers, managers and fishers are generally not aware of the vulnerability of the stocks and ecosystems to the combined impacts of over-exploitation, pollution, habitat destruction and climatic variations and change. A recent study of FAO, which was confirmed by findings of a CRFM-WECAFC fisheries management review study revealed that of 37 commercially important fish stocks for the Caribbean some 17 were fully or over exploited while none was underexploited. For twenty commercially targeted fish stocks the status of the stock was unknown; this lack of information causes difficulties for managing these stocks sustainably. About the situation of non commercially targeted fish stocks there is generally no information at all available in the Eastern Caribbean.

### **Climate change and its impact on fish stocks and fisheries**

Climate change is expected to have a wide range of impacts on the Caribbean fisheries sector and the fish stocks/resources it utilizes. These impacts include changes in distribution and structure of exploited populations, habitats, fishing conditions, and loss or degradation of fishing sites and infrastructure. Climate

models suggest that fish catches in low-latitude regions may decline as a result of reduced vertical mixing of the water column and, hence, reduced recycling of nutrients. Extreme weather events (e.g. hurricanes) associated with abnormally high sea surface temperatures are damaging coastal ecosystems and infrastructure, and increasing risk to fishers.

Although the national environment and crisis management government agencies are aware of the vulnerabilities of the fisheries sector to climate change, the sector generally receives limited attention in national disaster risk management and climate change adaptation policies and plans. Moreover, climate change related risk mitigation and adaptation measures are generally not integrated in national fisheries policies and plans in the region. As a consequence fishing practices and fisheries management (if any) continue as business-as-usual, while fish stocks are being depleted and ecosystems and biodiversity are in decline and increasingly vulnerable to climate change and climate variations.

The problem is compounded by the lack of knowledge and engagement of the fishers in relation to the threats they face and to the opportunities for increasing the sustainability and safety of their livelihoods. Appropriate knowledge, at the community level, is a critical requirement for risk reduction and effective natural resource management under an increased extreme weather events scenario. Opportunities for knowledge sharing between fishing communities have been limited by the geographical isolation, cultural and political differences of the SIDS of the Eastern Caribbean. Current mechanisms for sharing knowledge and learning best practices are insufficient.

The IPCC Fourth Assessment Report: Climate Change 2007 noted amongst others that there has been an increase in hurricanes in the North Atlantic since the 1970s, and that increase correlates with increases in sea surface temperature. " The observed increase in hurricane intensity is larger than climate models predict for the sea surface temperature changes we have experienced". The same report also models that in the Caribbean the annual temperature will increase by end of the 21st century with a range from 1.4°C to 3.2°C (median of 2.0°C) and that surface water temperature will increase with 1° C. Research has shown that a sea surface temperature increase of 1°C will have large effects on the distribution of Dolphin fish (*Coryphaena spp.*). Moreover, to the above indicators of change we can add some initial evidence of change in rainfall patterns in the Caribbean and corresponding changes in dry and rainy periods with very heavy showers, causing floods in some cases. The indicators of change demonstrate an urgency to assess the vulnerability of fishing communities and the fisheries sector properly to ongoing climate change and variability and taking steps to increase resilience of those fisherfolk and their communities that are most vulnerable.

### **Current action to address climate change issues in the fisheries sector**

In collaboration with the governments of the Caribbean region, and particularly the WECAFC member countries, the FAO is supporting project development activities with the aim of increasing the understanding of the vulnerability of Caribbean fisheries to climate change and implementing adaptation strategies that will enhance the resilience of coastal communities and ecosystems and that are in line with the FAO/CRFM/WECAFC/CDEMA/CCCCC "Strategy and Action Plan for disaster risk management and climate change adaptation in fisheries and aquaculture in the CARICOM region". The Strategy builds on the CARICOM Liliendaal Declaration on Climate Change and Development and the Comprehensive Disaster Management (CDM) Strategy and Programme Framework 2007-2012 of CDEMA. The Strategies offered in the Strategy and Action plan include the following goals and objectives, based on strategic elements of the CDEMA Strategy:

#### ***Goal 1: Mainstream DRM into fisheries and aquaculture at multiple levels***

Objective: To fully recognize the interconnectedness of CCA and DRM, so as to integrate them fully into all fisheries and aquaculture policies and plans by 2015

#### ***Goal 2: Promote the adoption of measures and disseminate information that would make fisheries and aquaculture resilient to climate-induced damage primarily through a sustainable livelihoods approach***

Objective: Manage the adverse effects of climate change and disasters on fisheries and aquaculture

#### ***Goal 3: Promote in aquaculture and fisheries the use of renewable energy resources and the conversion of waste into new by-products***

Objective: Improve energy efficiency and conservation, and waste utilization consistent with global green economy initiatives

**Goal 4: Promote actions to reduce the vulnerability of natural and human systems in CARICOM Member States to the impacts of a changing climate**

Objective: Limit the effects of climate change on fisheries and aquaculture contribution to food security

**Goal 5: Promote sustainable fisheries policy and management that incorporates ecosystem approaches to fisheries and aquaculture**

Objective: Use of fisheries to support sustainable development and maintain services from connected ecosystems

This Strategy and Action Plan was discussed and endorsed at technical level by representatives of climate change, disaster risk management and fisheries agencies of 23 countries and overseas territories in the Caribbean region. This endorsement took place at a regional workshop, held in Kingston, Jamaica on 10-12 December 2012.

The Strategy and Action Plan is being shepherded by CRFM through the CARICOM governmental approval processes in 2013/14, but all stakeholders have agreed to start implementing the Strategy immediately. This project will address the main priorities for action under the Strategy and Action Plan specifically for the Eastern Caribbean countries. It focuses on those areas where most impact can be achieved in a relatively short time frame, while ensuring that the capacity to be built will be based on existing structures and institutional frameworks.

Under the Strategy FAO is supporting the preparation of programme proposals on climate change adaptation and disaster risk management in fisheries and aquaculture in the Caribbean region, through collaboration with CERMES/UWI, CDEMA, CRFM and the CCCCC. Funding for these proposals has not been obtained as yet, but it is anticipated that the CCCCC will provide some assistance in the near future, particularly for regional studies. Any of the projects that will be resulting from these proposals will closely collaborate with this project and FAO will ensure that projects don't overlap or duplicate, but instead will build on each other's work and collaborate wherever possible. In addition, FAO has been actively carrying out various small-project activities in support of project development on Climate Change related subjects, resulting in national level Strategic Frameworks for disaster risk reduction in agriculture, forestry and fisheries in some of the countries (St Lucia, Dominica) that mainstream agriculture and fisheries sectors with DRM. Moreover, FAO developed emergency needs assessment methodologies for the fisheries sector, which are in a test phase currently. Recently (February 2013) a publication titled "Status of Disaster Risk Management, Plans for Floods, Hurricanes and Drought in the Agriculture Sector: A Caribbean Perspective".

The barriers to adaptation of the fisheries sector to climate change and variability, as mentioned under section 1 above, are largely derived from an assessment study that preceded the Strategy and Action Plan. These barriers cannot be addressed under the current baseline scenario by the fisheries administrations. While the willingness exists to remove these barriers, the administrations won't be able to do so without international assistance from GEF and FAO.

**3) the proposed alternative scenario, with a brief description of expected outcomes and components and the project**

The five components of the Project respond to the needs expressed by the targeted countries namely: Trinidad and Tobago, Grenada, St Vincent and the Grenadines, St Lucia, Dominica, Antigua and Barbuda, and St Kitts and Nevis. The project involves a number of win-win adaptation strategies that include; (1) the development and introduction of practical climate change adaptive fisheries management tools, (2) strengthening the capacity of fisherfolk organizations to adapt to climate change and variability and particularly to reduce their vulnerability and increase their access to critical safety equipment such as VHF and GPS, (3) the development of innovative information and communication technologies (ICTs) for information sharing between fishers, scientists and policy-makers on climate change and variability and its immediate effects, (4) pilot and demonstrations activities to support uptake of climate change adaptation by the fisherfolk and aquaculturists, (5) knowledge networks establishment and strengthening and (6) policy adjustments to mainstream climate change adaptation into fisheries policies, strategies and management plans.

Key baseline projects and initiatives for the proposed project are summarized in this and the next section; additional relevant activities and initiatives involving the main project partners and other donors are included

in Annex II of this PIF. Results from a more comprehensive analysis will be delivered during the project preparation (PPG) phase.

### **Objectives of the SCCF project**

The objective of the proposed project is to increase resilience and reduce vulnerability to climate change impacts in the Eastern Caribbean fisheries sector, through introduction of adaptation measures in fisheries management and capacity building of fisherfolk and aquaculturists. Through this proposed SSCF funded project FAO, national authorities in the 7 countries, NGO's, CBO's, the private sector and regional fisheries bodies (CRFM, WECAFC) will work together build capacity to enable the sector to adapt to climate change and variations and ensure mainstreaming of climate change considerations into fisheries infrastructure investments, policy and management frameworks, as well as in the behavior of fisheries sector stakeholders. In order to reach the objective this project will take an innovative, multi-sectoral approach, building on lessons learned and particularly the ecosystem approach to fisheries (EAF) and will particularly: decrease vulnerability to climate change and variability in the fisheries communities of the Eastern Caribbean countries, strengthen adaptive capacity of national and regional institutions through targeted capacity building on climate change risks and functional and practical adaptation measures and technologies, ensure that future fisheries management plans incorporate climate change adaptation measures and strategies and investments, contribute to redesign of the aquaculture and fisheries infrastructure, support introduction of climate proof aquaculture in the region and build capacity among fisherfolk to apply safety-at-sea measures that reduce fishers vulnerability of climate change and variability impacts. Overall, the project is designed to contribute to aquatic biodiversity through contributing to sustainable fisheries practices, to add to regional and national food security objectives, to encourage climate proof behavior and investments in the sector, safeguard fisheries sector employment and reduce loss of life in the fisheries sector.

### ***Project Outcomes and Components***

To meet the above project objective, the following outcomes are anticipated:

- 1) Improved understanding and awareness of vulnerability of the fisheries sector and strengthened regional policy for adaptation;
- 2) Programmes for increasing fisherfolk resilience to climate change and climate variation developed that strengthen Safety at Sea, through increased use of VHF, GPS and the development and dissemination of a smart phone app;
- 3) Governance and co-management systems enhanced through the expansion of regional knowledge networks, the implementation of participatory data collection and planning pilot projects and improved technical and business skills for climate change and variation vulnerable groups (e.g. youth, women);
- 4) Fisheries management capacity increased and the "ecosystem approach to fisheries" including climate change considerations incorporated into management practices; and
- 5) "Climate proof" aquaculture promoted through demonstration and training centres.

The project will be implemented through five closely related components:

**Component 1:** Assess biophysical, social and economic impacts of climate change and sea level rise on Caribbean fisheries

**Component 2:** Increase use of existing communication technologies for fishers and develop an innovative ICT platform for climate variability related risk and vulnerability reduction and greater information sharing between fishers and policy-makers (e.g. smart phone app).

**Component 3:** Empower fisherfolk organisations in order to promote governance and co-management systems that are based on an understanding of ecosystems, climate change and variations, partnerships, inclusiveness, equity and sustainable livelihoods.

**Component 4:** Strengthen existing fisheries management capacity and mainstream 'adaptation thinking' into management practices.

**Component 5:** Develop aquaculture demonstration and training programme for food-security and alternative livelihoods.

For each component a description is provided below detailing both the baseline/business as usual scenario and adaptation alternative

### **Component 1: Assess biophysical, social and economic impacts of climate change and sea level rise on Caribbean fisheries**

(5.4 million USD from the participating governments, FAO and partners co-financing, with 0.8 million USD requested from the SCCF)

#### ***Baseline/Business as usual scenario***

Under **Component 1** the Fisheries Divisions will continue to implement, and improve where necessary, their data and information collection on fisheries and aquaculture production, fleet status, fish stock status of species of commercial importance, imports and exports of fish and fisheries products and on employment in fisheries. Social and economic data collection in the sector, including poverty assessments, will continue with an interval of a few years to measure trends and developments, in close partnership with census and statistical bureaus. Ministries of Environment and coastal zone management units will continue to measure surface water temperatures, sea rise levels, coastal damage information after storms and other relevant information that will feed into the activities that will be carried out under this project component. Damage assessments will be carried out after every major disaster, often coordinated by prime-ministers offices and involving the disaster risk and emergency units as well as all relevant line ministries, including Fisheries Divisions.

#### ***Adaptation alternative***

**Component 1** will focus on improving the understanding of the vulnerability of Caribbean fisheries in the target countries by analyzing the nature of the exposure, sensitivity and adaptive capacity of fishing communities to climate change. This work will strengthen existing technical capacity and develop collaborative programmes between regional and international institutions (CERMES, CCCCC, CRFM, CARIBSAVE, Met Office Hadley Centre, WRI, etc) to better inform policy and improve public understanding of the threats to fisheries from climate change. It will collect necessary baseline data and develop downscaled climate models to improve projections of biophysical parameters relevant to fisheries management, such as sea temperature, ocean currents, freshwater inputs, chlorophyll and sea level rise as well as changes in current speed. All of these parameters could have impacts on the fisheries sector. This multidisciplinary component will also involve the development of econometric models for the assessment of future social and economic impacts (including food security and employment) on Caribbean fishing communities. The outputs from these models will be incorporated into management and planning decision-making processes and communicated to fishers. It is foreseen that the project will build capacity on the use of the models among regional (e.g. CERMES, WECAFC, CRFM) and national institutions and that the models will be valuable and used also after project termination for important management decision making processes. This will be guaranteed through Memoranda of Understanding (MoUs) between the regional institutions involved and incorporation of climate change adaptation as standing item in the agenda's of CRFM and WECAFC sessions.

Methodologies for participatory data collection for Marine Spatial Planning (MSP) developed by CERMES within the MARSIS project will be expanded and replicated in other Caribbean countries. The Marine Resource and Space-use Information System (MARSIS) is a pilot project that has successfully integrated a wide range of marine-based knowledge from fishers and scientists from Grenada and St Vincent and the Grenadines in order to provide stakeholders with a more complete information base for marine planning and management. The Project will expand this successful pilot to fishers in other target islands of the Eastern Caribbean, and extend its scope to integrate climate change adaptation planning, into the ecological and governance aspects of fisheries management. This would contribute to mainstreaming climate change and "adaptation thinking" into co-management practices by promoting awareness and discussions among fishers and managers.

The GEF SCCF contribution will thus enable the integration of fisheries, environment and climate change data and information and the development of the above mentioned models, capacity building on the long-term use of these models at national and regional level, active participation of fishers and other key stakeholders in the collection, analysis and dissemination of the data and information, and will enable the policy and decision makers in fisheries and environment sectors to make better-informed decisions in support of sustainable use of the aquatic resources.

**Component 2: Increase use of existing communication technologies for fishers and develop an innovative ICT platform for climate variability related risk and vulnerability reduction and greater information sharing between fishers and policy-makers (e.g. smart phone app).**

(6.0 million USD from the participating governments, FAO and partners co-financing, with 0.9 million USD requested from the SCCF)

***Baseline/Business as usual scenario***

Baseline activities in support of **Component 2** include the continuation of basic safety-at-sea instructions to fisherfolk by coast guard and fisheries divisions' staff. Currently safety-at-sea instructions are generally given as part of an overall training on fisheries, fish hygiene, navigation and engine and boat maintenance. The instructions are considered insufficient by fisherfolk and too much of a voluntary nature, while in training needs assessment in the fisheries sector the safety-at-sea and first aid courses generally appear among the highest priorities. The project will build on existing, improve and use best-practice safety-at sea trainings by working closely with the institutions that currently conduct the instructions and trainings on this subject.

Currently some 10-20% of the fishers (mainly those with iceboats) use marine VHF radios, while the large majority of so called "day boats" do not have VHF radios. The use of GPS technology by fishers has increased largely in the last decade and now between 30-40% use GPS; this technology is used often to locate the fish and lobster traps, Fish Aggregating Devices (FADs) and other gears. Current training courses in navigation technology are often narrowly focused on fishing activities and do hardly refer to the importance of IT in terms of navigation and in support of safety-at-sea measures. In recent years more and more fishers got mobile phones, and lately these were smart phones. However, studies in several of the countries (Dominica, Trinidad) showed that fishers do generally not (yet) consider mobile phones as part of their safety-at-sea equipment. A study (2011) from Dominica mentioned that only 2% of the fishers saw their mobile phone as important safety-at-sea equipment. Nevertheless, the reach of mobile phone networks has extended tremendously and areas up to 4 miles off-shore often have network coverage. Most day boats fish within this range. Currently 80-85% of the population in the participating countries has a mobile phone (active SIM Cards) or smart phone. This average penetration rate of mobile phones in the Caribbean population is likely not different among fishers. Text messaging as early warning for storms/bad weather alert is not provided at present, but may be introduced for mobile phones, using the mobile phone data collected at issuing of the annual fishing licences/permits, and fisheries specific weather information (as available in many areas world-wide) could be transferred through smart phone applications.

***Adaptation alternative***

**Component 2** (Programmes for "Safety at Sea" ) will be strengthened by "early warning needs assessment" and training programmes to increase capacities to cope with extreme weather events associated with climate change and variability. The use of VHF and GPS and other critical technologies for safety at sea will be promoted through training programmes and small grants (linkages with Component 3). The "early warning needs assessment" will be based on IMO conventions and make use of lessons learned by and linkages with NOAA (USA) and CDEMA to ensure coherent regional approaches and develop jointly the most suitable capacity building methods and materials. The dissemination of relevant information to fishers will be achieved through the development of a new application for smart phones that will provide fishers with the latest information on sea conditions, weather and tropical storm tracks. Similar smart applications have been developed for fishers in Trinidad by researchers at UWI (*mFisheries*) and in India (*Fisher Friend*) and were tested on a small scale only as part of a research project. The new app will be designed for affordable mobile devices (including android and ios based) and provide a range of needs-based locale-specific, demand driven information. *mFisheries* allows users to easily send their position to selected recipients (e.g. coastguard, relatives) in case of an emergency. *mFisheries* also allows the user to post information to a website about their catch while still at sea, in order to find a buyer before they reach shore. This benefits the fisher in two ways - time is not spent selling fish, thereby increasing efficiency of the chain, and the fish are sold fresh for a better price. This kind of ICT empowers fishers and contributes to improving their business skills and technical literacy. It can also add to improvements in catch reporting in the region, as a major share of the catch currently goes unreported. Moreover, it will be included in training packages on safety at sea for fishers in the Caribbean region.

The GEF SCCF contribution to this component will thus enable the Eastern Caribbean SIDS to professionalize and extend the existing fairly limited safety-at-sea training and instruction programmes, improve these programmes further and add new technological innovations where such is considered desirable and cost-effective. In the short term it is foreseen that the innovations introduced and capacity built among the fisherfolk with support from the project will significantly reduce the number of accidents and fatalities in fishing, contributing to social cohesion and stability in fishing communities and sustainable livelihoods. Moreover catch reporting will improve, reducing the non-reported share of catch (which is now estimated at one third of the total catch in some of the participating countries) and thus adding to natural resources management decision making processes.

**Component 3: Empower fisherfolk organisations in order to promote governance and co-management systems that are based on an understanding of ecosystems, climate change and variations, partnerships, inclusiveness, equity and sustainable livelihoods.**

(4.45 million USD from the participating governments, FAO and partners co-financing, with 1.2 million USD requested from the SCCF)

***Baseline/Business as usual scenario***

Under **Component 3** the Fisheries Divisions, often in close cooperation with those units in the Ministry that promote cooperatives in the agriculture sector, are providing advice and capacity building to the leadership and members of fisherfolk organizations, in the establishment process and operations of these organizations. Every year each of the fisheries divisions in the participating countries organizes at least 4 meetings/workshops with fisherfolk organizations and their representatives and often fisherfolk representatives are participating in the ministerial Fisheries Advisory Committees (FACs) that are established in most of the countries.

These capacity building efforts directed at fisherfolk organizations were often top-down organized, but recently (partly as a consequence of introduction of the Ecosystem Approach to Fisheries) have become more participatory. Fisherfolk, especially the national level organizations and the CNFO, have become more open, adaptive and collaborative. CNFO is established, but is still far from becoming the Network it would like to be. Fisherfolk organization participation in fisheries data collection schemes has hardly improved in recent years, aside from a few positive pilot experiences. Data and information on fisheries is being collected, but not linked with environment data in the current data bases used at regional level; a gap which the project could address. The potential role of fisherfolk organizations to transfer climate change and variation and ecosystem use related information to their members in an effective manner has not been tested and this project can assist in this with innovative approaches.

Fisherfolk organizations are supported by the Government in terms of construction and maintenance of fish landing sites and fishing ports in fishing communities and often they have free access or at subsidized rates to tap water and electricity. Nevertheless, specific climate change adaptive technologies, such as boat hauling support (winches) at landing sites are often not provided but may be required, as well as VHF radios, text messages/weather alerts through mobile phones and other technologies to communicate with fishers at sea. Moreover, risk distribution or risk coping mechanisms used by the fishers are generally few. While health and life insurance is available, these services are often not purchased, and vessel and gear insurance is generally not available to the fisherfolk.

***Adaptation alternative***

The project will build the capacity of the Caribbean Network of Fisherfolk Organisations (CNFO) in order to improve information exchanges between fishing communities and increase their participation in national and regional fisheries management (**Component 3**). The project will promote learning of best practices through regional knowledge networks and exchange programmes that build on the success of the *Fisheries for Fishers' Initiative* (GCFI) (see also Annex II) and will specifically address the dissemination/demonstration of practical adaptive technologies (e.g. on vessel design, use of specific gears and navigation/GPS tools) and adaptive measures (e.g. cooperative insurance schemes, risk analysis in business planning) from fisher to fisher. The CNFO will strengthen community-based fisherfolk organisations in target countries by administering a small grants capacity-building programme that will support climate change adaptation and reducing vulnerability to disasters among fisherfolk. These small grants will serve to provide equipment and training that decrease the



vulnerability of fishers – e.g. training in business skills, insurance schemes, coping with loss, and approaches for rapid response and boat hauling. The manuals and other training materials developed by the project will be disseminated in hard copies and made available on-line on websites of the project and project partners (CRFM, CNFO, CERMES, WECAFC, etc), as well as integrated in the smart phone application (see component 2). The CNFO will promote (with CRFM, WECAFC and others) the implementation of the Code of Conduct for Responsible Fisheries by the fishers and the rights-based approaches associated with the Code implementation to further application of best-practices in fisheries governance and fishing in its widest sense. The GEF SCCF project interventions under this component will thus support introduction of a range of innovative and adaptive fisheries technologies, reduce vulnerability to climate change and variations among fisherfolk, increase the investment in and adoption of mitigation and adaptation measures and tools that contribute to sustainable aquatic resource use and can save life of fisherfolk, particularly those involved in lobster and queen conch scuba and hookah fisheries.

**Component 4: Strengthen existing fisheries management capacity and mainstream ‘adaptation thinking’ into management practices.**

(13.255 million USD from the participating governments, FAO and partners co-financing, with 1.4 million USD requested from the SCCF)

*Baseline/Business as usual scenario*

**Component 4** of the project supports an area what receives most attention from the relatively small Fisheries Divisions in the participating countries. The Fisheries Divisions are developing plans and implementing fisheries management for specific species, groups of species and certain fisheries techniques. These plans are generally limited to fisheries and do not include adaptive thinking. The baseline activities that the Fisheries Divisions carry out and will continue to carry out (with lessons learned from the project) during project implementation include, amongst others: assessment of the fishery, provide expertise/advice and extension services to fishers, development of legislation in support of fisheries management, set rules for fishing activities, issue licenses and permits, enforce agreed rules and regulations, Set rules for institutional relationships, supply information on the fishery to Government and the public, and ensure that international responsibilities/agreements are taken into account. These are all major tasks and responsibilities that will contribute to the successful implementation of the project. Recently the fisheries management has become more complicated for the Fisheries Divisions, through introduction of the EAF and multi-sectoral and multi-disciplinary approaches, however it should be noted that these approaches have not been embraced yet by all Fisheries Divisions and if often not at the level the fisherfolk and other stakeholders desire. The ongoing development of management plans, using EAF approaches, provides entry-points to incorporate adaptive thinking into fisheries management in the participating countries.

Investments by Fisheries Divisions and line Ministries (e.g. agriculture, environment) continue in the administration, operationalization, maintenance and security of main fish landing sites, fishing ports and fish markets, taking into account safety, security and hygiene aspects, but neglecting the potential impact of climate change and variability. The project will address this and apply subsidiary principles to increase levels of co-management/community based management and introduce rights-based approaches that enable fisherfolk to assume a greater role in the management of the resource; following the line of thought that ownership will increase sustainable and responsible practices in the sector.

*Adaptation alternative*

Under its **Component 4** the Project will strengthen existing fisheries management regimes and support the mainstreaming of climate change and promote greater understanding of the importance of the “ecosystem approach” to fisheries and aquaculture in the context of climate change adaptation. Knowledge-sharing and awareness programmes targeted at policy-makers, fisheries managers and fishers will encourage discussions on “best practices” and strategies for increasing resilience. The FAO Code of Conduct for Responsible Fisheries will form the basis along with its technical guidelines for the development of practical climate change adaptive management plans and other innovative solutions. The participating countries in this project generally do not have fisheries management plans, only plans for the main commercially targeted species or plans that are outdated and not relevant anymore. The project will support the countries to develop the highly needed management plans in such a way that these are formulated and implemented using an EAF approach, multi-

stakeholder and multi-sector, and will take climate change and variation seriously, promoting sector-wide adaptive measures and for specific fisheries. Capacity will be built among the key stakeholders to enable them to continue adjusting their plans and implementation measures based on new information, whenever required.

The regional project partners will ensure that best-practice adaptive technologies and management measures will be disseminated and promoted (and endorsed if relevant) at regional level. The CRFM and WECAFC will also support the development of investment policies and the formulation of viable business cases that will be attractive for innovative public-private-partnerships, crowd funding and for financing by development banks (e.g. IBRD, IDB). The GEF SCCF project assistance will thus contribute to mainstreaming climate change adaptation measures in fisheries management at national and regional level, develop, build capacity for and implement climate change sensitive planning processes, and generate future climate proof investment projects and programmes targeting the fisheries and aquaculture sector and related infrastructure in each of the participating countries.

### **Component 5: Develop aquaculture demonstration and training programme for food-security and alternative livelihoods.**

(4 million USD from the participating governments, FAO and partners co-financing, with 0.9 million USD requested from the SCCF)

#### ***Baseline/Business as usual scenario***

Aquaculture development is in its infancy in the participating countries. Baseline activities that will contribute to **Component 5** are therefore relatively limited. Most of the participating countries (St Lucia, St Kitts and Nevis, Dominica, Trinidad and Tobago) possess however small aquaculture demonstration facilities, generally operated by the Fisheries Divisions. These facilities are often old, not well-designed, build at unsuitable and high risk (e.g. flood, sea level rise, pollution) locations. However, with some of the facilities could be upgraded and made climate proof though relatively simple modifications (small dykes, different placing of in- or outlets of pond systems, etc). In the baseline situation the Fisheries Divisions maintain, staff and operate the aquaculture demonstration facilities, which can include hatcheries and nurseries, as well as ponds or tanks for research, training and demonstration. Aquaculture research conducted is generally pretty basic (feed and growth trials) and does not include adaptive thinking or testing of transferred technology from other regions. The project will address these issues and contribute to building a climate proof aquaculture sector, which can grow in a sustainable and responsible manner.

#### ***Adaptation alternative***

**Component 5** addresses responsible aquaculture development based on native species, which will be promoted through the strengthening of existing, and the establishment of new, aquaculture demonstration and outreach centers. The focus will be on providing information, training and outreach to encourage and facilitate private sector investment. Aquaculture, both marine and freshwater, has yet untapped potential to provide the Eastern Caribbean with opportunities for alternative livelihoods and greater food-security and as such should be included as a strategy for climate change adaptation in the fisheries sector. However, as most current aquaculture demonstration facilities and hatcheries in the participating countries are not “climate proof”, it is required that this component provides also direct advice to public and private aquaculturists on the modifications required to their facilities to adapt these to climate change and variability. The adaptation advice provided will be enhanced through small-scale support to some facilities to adopt the measures proposed and serve as demonstration for climate proof responsible aquaculture development. Expansion of the work of the Aquaculture Network for the Americas to the targeted countries is foreseen to add to the activities under this component with high quality technical advice and extension services. Aquaculture production will be enhanced in the participating countries, contributing to reduced food import bills, increased food security, increased employment and reduced fishing pressure on stocks of commercially attractive fish species.

The GEF SCCF contribution will thus enable the Eastern Caribbean SIDS to make their aquaculture demonstration facilities climate proof, reduce pressure on coastal fisheries resources and build capacity in support of responsible development of an aquaculture sector which will be growing (after decades of standstill), offering alternative employment in rural areas, and will be addressing the increasing demands for fish in the project countries.

The above envisioned project activities will further be refined during project development in the PPG phase.

#### **4) incremental cost reasoning and expected contributions from the baseline, the GEFTF, LDCF/SCCF and co-financing**

The Eastern Caribbean countries are all involved in regional collaboration on fisheries, as well as on climate change and disaster risk management issues. Sub-regional and regional governance frameworks are established and functioning, such as the Caribbean Community Climate Change Centre (CCCCC), Caribbean Disaster and Emergency Management Agency (CDEMA), Caribbean Regional Fisheries Mechanism (CRFM) and the Western Central Atlantic Fishery Commission (WECAFC). These intergovernmental agencies bring together representatives from relevant line ministries of the member countries and provide frameworks for harmonization, information sharing and collaboration, intra- as well as inter-sector. Within the two fisheries sector agencies, CRFM and WECAFC, climate change issues are high on the agenda, which is reflected in their work plans and the reports of recent sessions and activities.

For instance, at the fourteenth session of WECAFC, held in Panama in February 2012, the members reported unusual climatic conditions and types of disasters that have impacted the coasts, fishing communities and fisheries resources. Severe floodings and consequent infrastructural damage, land slippages following heavy rain, hurricanes and consequent sedimentation, mass mortality of fish related to red tides or variations in rainfall were amongst the examples given. Impacts were also reported on coral reefs, seagrass beds and mangroves that sustain the fisheries and livelihoods in the region and the negative impacts on food security.

The CRFM and WECAFC both are competent in dealing with fisheries management matters, capacity building and strengthening of fisheries institutional frameworks at national and regional level, but at the same time they do not have in their regular budgets an allocation for mainstreaming climate change adaptation work in their fisheries research and management advisory services. The institutional will is available among the secretariats serving these regional fisheries bodies. The members agreed with the Secretariats becoming more active on climate change adaptation aspects, through seeking extra-budgetary support and working closely together as regional partners with the CCCCC and CDEMA.

The combined current annual Government budget for fisheries and aquaculture development and management for the 7 countries involved in this project is around 12 million USD, while contributions by related sectors, international and bilateral donors and NGOs add up to another 2 million annually. This limited budget is largely used to cover staff costs and the basic operations of the national fisheries administrations, including data and information collection, planning, fisheries research, management and enforcement. Currently most regular programme budget of the fisheries authorities is used for staff working on data and information collection and analysis and for the maintenance and repair of fish landing facilities for small-scale fishers. Many of the participating islands have received over the last decade contributions from the Government of Japan towards construction/modernization of fish landing sites and the fisheries authorities are generally responsible for the maintenance, repair and security of these important sites.

While there is interest in the fisheries sector administrations to take on board climate change and variability issues affecting the sector, they recognize that they cannot do this alone and should work together with other sectors. This collaboration with other sectors is commonly done on an *ad hoc* basis and is not institutionalized. Limited funding and gaps in human capacity at the fisheries administrations cause that currently insufficient attention can be given to climate change adaptation in the fisheries sector. Baseline co-financing, considered as the business-as-usual scenario, is agreed to by the fisheries administrations. The indicative co-financing (listed in Table C) for the participating national governments is 50% of what was provided as business-as-usual scenario. The annual budgets for fisheries and aquaculture in the participating countries, along with budgets for fisheries enforcement, and fisheries and aquaculture research and capacity building projects were provided as business-as-usual scenario, but as not all the budget contributes directly to sustainable fisheries and aquaculture management and development only 50% is listed here. All participating countries confirm to support in-kind staff time (within their Fisheries Division's capacity limitations), office space and meeting facilities for work under the project.

The Regular Programmes of the Fisheries Divisions (Fisheries administrations) provide the baseline for the five project components. Therefore the governments will co-finance each of the components. However, in relative terms most co-financing will go to component 4 "Strengthen existing fisheries management capacity and mainstream 'adaptation thinking' into management practices" as this component is closest to the current

ongoing regular programme and the associated budget allocations at national level in the participating countries.

### ***Cost effectiveness of the proposed project approach***

In the absence of the proposed GEF SCCF project, the number of Eastern Caribbean countries that would integrate climate change considerations in fisheries management would be extremely limited, because of insufficient understanding of the climate change vulnerability of the fisheries sector, inadequate capacity of fisherfolk organizations to engage effectively in fisheries management, inadequate institutional capacities, but primarily because of lack of financing for the sector. Investments by national governments in fisheries would be directed to maintaining core functions of fisheries administrations and addressing with small sums of money *ad hoc* problems that may arise. Incoherent and piece meal projects would be used to fill urgent gaps; projects that would fail to address the overarching and long-term needs of the sector and the fisherfolk who depends on the sector for their livelihoods; fisherfolk that have hardly any alternative livelihood options.

Fisheries management projects would be “silo” type, looking only at the sector and failing to capture the essential linkages with other sectors; linkages that add efficiencies, investments, profits and increased sustainability to the fisheries and the life aquatic resources it utilizes.

Fisheries would continue to be one of the most dangerous occupations, resulting in increasing numbers of occupational accidents and deaths (particularly in lobster and queen conch diving). The image of the sector would further deteriorate and the deaths would add to the stigma of fishers and the perception that fisheries is an employment of last resort.

Investment in aquaculture would remain at the current low level, as risks involved would be considered too high for most private parties, while publicly financed aquaculture demonstration facilities would be under-utilized and their maintenance would be limited to damage repairs.

The food import bill of the Eastern Caribbean countries would continue to increase, as over-exploitation of fisheries resources would continue, further reducing catches and aquaculture production would not be able to fill part of the increasing gap between supply and demand. The growing population in the project countries would require increased fish and fisheries products imports, in a time when debt to GDP ratios of many of the participating countries has reached unhealthy and unsustainable levels.

The project approach proposed is deemed to be the most cost-effective to increase resilience and reduce vulnerability to climate change impacts in the eastern Caribbean fisheries sector. The proposed SCCF project will demonstrate the benefits of adaptation interventions in the fisheries and aquaculture sector, not just in terms of production and saved lives, but also in terms of social, economic and ecological contexts.

It is highly likely that the adaptation benefits introduced by the project will lead to more sustainability in fisheries resources management, aquatic biodiversity, food security and livelihoods, because GEF SCCF funds will leverage commitment and investments from FAO and the participating countries, as well as from the fisherfolk and aquaculturists themselves and their organizations. The multi-stakeholder coordinated approach proposed will provide the necessary base for making coherent and viable investments with little chance of failure.

FAO has secured 34.85 million USD baseline co-financing commitments (see Table C), which includes contributions from the participating governments, FAO itself as well as from other implementing partners such as CARIBSAVE, CRFM and WECAFC.

Apart from the above regional and national level there are various fisheries -specific regional projects taking place that are relevant to this project proposal:

- The Caribbean Large Marine Ecosystem (CLME) project, supported by GEF, has in recent years completed its Transboundary Diagnostic Analyses (TDAs) using a Fishery Ecosystem-based approach. The information collected and analyzed by the CLME (in which CRFM and FAO were partners) has been incorporated into a Strategic Action Programme (SAP). The SAP addresses certain climate change issues as well and it is foreseen that this project will contribute to the implementation of certain components of the SAP that are relevant for the Eastern Caribbean countries.
- The GEF project on “Sustainable management of bycatch in Latin America and Caribbean trawl fisheries” (REBYC-II LAC), in which 6 countries from Central and South America will participate, including Trinidad and Tobago.
- The FAO funded CRFM-WECAFC “Review of Current Fisheries management Performance and Conservation Measures in the WECAFC Region” aims to provide an overview of the status of fisheries management in the region and its findings include suggestions and recommendations for improving fisheries management regimes in the region with great attention to the effects of climate change and variability.

Other relevant ongoing regional projects include: the Regional Master Plan for Sustainable Development of Coastal Fisheries Resources in the Region (CRFM/ CARICOM); Future of Reefs in a Changing Environment (FORCE-CERMES; Climate Change, Coastal Community Enterprises, Adaptation, Resilience And Knowledge (“CCCEARK” – CARIBSAVE); The Caribbean Fish Sanctuary Partnership Initiative (C-Fish - CARIBSAVE/CCCC); The Climate and Development Knowledge Network CARICOM Research Programme (CARIBSAVE / CDKN/ CCCCC); the FAO/CNFO and ACPFish II/CANARI/CNFO work on the promotion of the Ecosystem Approach to Fisheries among fisherfolk organizations in the Caribbean, and the TNC project At the Water’s Edge (AWE): Coastal Resilience in Grenada and St. Vincent and the Grenadines.

The ongoing project work of CARIBSAVE, TNC, CRFM and WECAFC in relation to climate change and variability in the fisheries sector and fishing communities is recognized as co-financing for this project as partnerships between the projects and responsible stakeholders are being developed.

The baseline provides a good platform for a catalytic intervention, which addresses common priorities and interests. The project addresses a critical gap, as identified by the national communications to UNFCC of the countries participating in this project as well as in the Strategy and Action Plan for disaster risk management and climate change adaptation in fisheries and aquaculture in the CARICOM region. The project will provide for a targeted, comprehensive, coherent and coordinated effort to not only assess vulnerabilities, but to really find practical ways to help fisherfolk and fisheries administrations to deal better with climate change and variability. The adaptation work proposed, which is currently under the baseline scenario not possible, will generate sustainable impacts not only for the fisherfolk and their communities but also for the aquatic resources that are exploited by the sector.

##### **5) global benefits (GEFTF, NPTF) and adaptation benefits (LDCE/SCCF)**

This project will develop and test climate change adaptation measures, allowing consideration of the societal costs and benefits of implementing these specific fisheries and aquaculture sector related measures. Tangible adaptation benefits will be generated by the project; benefits that can be replicated successfully elsewhere in the world. Without the benefits of climate change adaptation interventions in the fisheries sector, particularly the cost-effective interventions focused on management of the aquatic ecosystems, the trend of overexploitation of fish stocks and further environmental degradation will continue, with resultant negative impacts on socio-economic development of coastal communities in the Eastern Caribbean countries.

It is foreseen that the project will address the adverse impacts of climate change and variation on the fisheries sector in the Eastern Caribbean. The activities under the proposed project are country-driven, highly cost-effective and are integrated into national development frameworks of these SIDS.

With support from the SCCF, FAO will help the Eastern Caribbean countries to project intends to be better prepared for, mitigate and anticipate climate change and variation and its impacts on one of the key economic sectors in these countries. The proposed project will provide the following adaptation benefits:

- Vulnerability to climate change and variability will have significantly decreased in the fisheries communities of the Eastern Caribbean countries resulting in reduced loss of life from future hurricanes, storms and floods.
- Livelihoods and social and economic benefits of thousands of fisherfolk in coastal communities will be secured through pertinent climate change adaptation investments in fishing practices, fishing gear innovations, boat designs and application of innovative communications technologies at sea.
- At least 2000 of the most vulnerable small-scale fisherfolk will be competent in and applying safety-at-sea measures, and will benefit by reducing their vulnerability to climate change and variability impacts.
- Climate change adaptation in fisheries and fisherfolk communities will be pertinently mainstreamed into broader sectoral, inter-sectoral, national and regional policy, legal and institutional frameworks, through capacity building and institutional strengthening of fisheries administrations, fisherfolk organizations and establishment of knowledge networks.
- New best-practice fisheries management plans (whether single-, multi –species at regional and national level, co-management, based rights-based approaches) will have been developed to fill gaps in management ; plans that are produced using an EAF approach and that incorporate climate change adaptation measures and strategies.
- Increased knowledge and understanding about the nature of the exposure, sensitivity and adaptive capacity of fishing communities and aquaculture investments to climate change, will be achieved within and among an estimated 300 staff of national and regional authorities and among fisheries sector stakeholders in the Eastern Caribbean in general.
- Strengthened adaptive capacity of national and regional institutions through targeted capacity building on climate change risks and functional and practical adaptation measures and technologies in the Eastern Caribbean fisheries and aquaculture sector.
- Investment in sustainable aquaculture will have increased, reducing losses in floods and tropical storms event, buffering water for use in agriculture while meeting an increasing regional demand for fish and diversifying economic activities in coastal areas with limited other employment opportunities.
- Pressure on coastal marine habitats, including precious coral reefs, and on aquatic biodiversity and reef fish stocks vulnerable to overfishing, will have reduced tremendously through responsible aquaculture development and introduction of adaptive fisheries methods and fisheries management plans. Depletion of certain reef fish stocks (e.g. Nassau and Goliath groupers), which status is now considered as overexploited at critical level, may be avoided in some of the participating countries through introduction and implementation of management and conservation measures with support of the project.

The proposed project will significantly contribute to the implementation of the Rio +20 declaration “the future we want” and the related UNGA resolution (66/228) in the Eastern Caribbean SIDS, as well as to the achievement of the Millennium Development Goals on sustainable development by the participating countries.

#### **6) innovativeness, sustainability and potential for scaling up**

**Innovativeness:** This project will innovative in many ways. It will introduce innovative technological solutions in the fisheries sector for sharing knowledge and reducing vulnerability to climate change related risks that affect the fisheries sector. The use of ICT technologies by fisherfolk will be promoted, and enable them to have access to real-time data and information from reliable weather forecasting agencies (e.g. NOAA) and institutions CDEMA. Mainstreaming climate change issues and adaptation measures in fisheries sector policies and planning process is in itself innovative in the Caribbean region, as only some limited efforts in this respect have been made at regional level and not at national level so far.

Moreover, the project will support application of the Ecosystem Approach to Fisheries (EAF) among fisherfolk organizations, continuing the work that the CLME project did at fisheries administrations level. Other innovative aspects are the promotion of rights-based fisheries management approaches at national level

in the participating countries, which will enable fisherfolk to adapt better to climate change and variability and participate truly in co-management. The project will ensure that climate change adaptation will be embedded in the overall governance processes in the fisheries sectors of the participating countries and at regional level; something completely new in the Eastern Caribbean SIDS as none of the participating countries currently has climate change adaptation strategies and measures mainstreamed in their national fisheries policies, fisheries strategies and fisheries management plans.

Finally, the project will facilitate the introduction and uptake of the most innovative and cost-effective approaches, practices and technologies for sustainable “climate proof” aquaculture development in the Caribbean (e.g. aquaponics, recirculation, submersible cage/culture systems). In contrast to conventional demonstration facilities for aquaculture, the project will develop public-private partnerships to jointly develop of practical and functional solutions and effective drivers for change. Similarly, the project will be innovative in terms of promoting adaptive fishing practices. Examples of such innovations include: the introduction of fishing gears that will have less impact on the coastal habitat and aquatic biodiversity, gears that don’t continue to catch when they are lost at sea, introduction of fuel efficient and less polluting outboard engines, introduction of fuel efficient fishing vessel designs, as well as finding ways to better target invasive species (e.g. lionfish) and adjust gears and practices to different seasonal migration patterns of fish resulting from climate change and variation.

Innovativeness will also be sought in investment where the project will not only look into the opportunities to increase its scope and impact through traditional donor funded projects and development bank investments for climate change adaptation. Innovative approaches to investment will include public-private partnerships, crowd-funding, as well as transfers of public facilities (e.g. landings sites) to private companies to increase profitability and effective use of these facilities and lessen the reliance on government budget.

**Sustainability:** This project aims to maximize synergies between various climate change adaptation measures and will directly and indirectly contribute to the achievement of regional and national level socio-economic and environmental benefits, and thereby a more sustainable fisheries sector. The project will ensure sustainability of its results and achievements by building capacity of fisheries administrations to address climate change and variation and of fisherfolk organizations at national and regional level (CNFO) in terms of introduction of climate change adaptation measures. The national and regional level organizations involved will be strengthened to be capable and competent to continue promoting project activities after project termination. Ownership by the stakeholders of the project and its objectives and activities will be key to the sustainability efforts of the project. The project will encourage participation of both men and women, some of the project components will target women working in fisheries and aquaculture in particular. It is recognized that women play an important role within fisherfolk organizations and bring stability and continuity to the management of these organizations; the strengthening of the management of these organizations will therefore focus pertinently on strengthening the capacity of women. Gender-disaggregated data will be collected and analysed by the project to understand the gender dimensions of climate change adaptation in the fisheries sector, which will be used in the implementation of the various project components. Through supporting mainstreaming of climate change issues and adaptation measures in fisheries sector policies and planning process at national level policy attention for climate change issues and budget allocations will guarantee sustainability of the outcomes of the project. Moreover, the development of public-private partnerships will reduce costs and increase effectiveness of fisheries administrations of these Caribbean SIDS, ensuring that a range of capacity building, extension and demonstration services will continue also if government budgets for these services are under pressure.

**Potential for scaling up:** The project will seek and establish firm linkages with other GEF projects (e.g. CLEM+ and REBYC-II LAC) active in the region and other projects and programmes. These linkages will enable that national level achievements in the project partner countries can be more widely disseminated in the Caribbean region. It is recognized that the close ties of the project with the regional fishery bodies (CRFM, WECAFC), research institutions (UWI/CERMES), regional disaster management and climate change institutions (CDEMA and CCCCC) and NGOs (CARIBSAVE, TNC) will enable the project to spread its achievements and lessons learned to other countries in the region and upscale its impact. Significant synergies of the above mentioned linkages and ties are expected. The harmonizing of the methods and approaches will support future up-scaling to attain high quality results.

The project can play a true catalytic role by producing its findings and recommendations in such a way that they can be reviewed and adopted at regional level by the fisheries bodies and regional institutions. Moreover, by being in close contact with and reporting progress also to the Caricom secretariat and related institutions the project will make a major contribution to the implementation of the Strategy and Action Plan for disaster risk management and climate change adaptation in fisheries and aquaculture in the CARICOM region.

Finally, the information collected and lessons learned will be used to seek further investment for climate change adaptation measures in fisheries and related sectors in the participating countries. Follow-up bankable investment proposals will be developed to scale-up the key achievements of this project.

## **A.2 Stakeholders. Identify key stakeholders (including civil society organizations, indigenous people, gender groups, and other as relevant) and describe how they will be engaged in project preparation.**

The Project will involve the ministries responsible for fisheries, environment and marine affairs, and planning authorities in the target countries. The following regional institutions will also be involved; CRFM, WECAFC, CCCCC, UWI, OECS, CARIBSAVE, TNC and others. These government agencies and institutions will be represented on the Project Steering Committee and where appropriate will be assigned to lead specific components/activities of the project. Regional and local NGOs (e.g. CERMES, GCFI, CNFO), CBOs and fisherfolk associations/cooperatives will also be involved. International partners will include various academic institutions, the Met Office Hadley Centre and the World Resources Institute (WRI) who bring leading specialist expertise in climate models and economic valuations of ecosystem services, and who have existing collaborations with the regional partners.

While national governmental institutions in the 7 participating countries are expected to benefit directly from capacity building activities and will be strengthened with dedicated staff support for addressing climate change adaptation interventions at national level, the regional institutions listed above will be involved as implementation partners of various components and sub-components. For instance Caribsava will be technically leading component 2, CNFO will have a leading role in component 3 and CRFM and WECAFC will jointly facilitate component 4.

So far the PIF preparatory work (baseline activities) have made only a preliminary assessment of the roles and potential engagement of a rather large range of stakeholder groups. The following stakeholder groups will have key roles in the preparation of the proposed project, and will likely be participating in other phases of the project cycle as well:

- **National governments of the 7 participating countries** (Ministries of Agriculture and Environment are expected to play leading roles; coastal zone management and fisheries units will be directly working on project development and implementation; participation of other government entities is also foreseen);
- **Regional fisheries, disaster management and climate change organizations** (CRFM, WECAFC, CCCCC, CDEMA, etc.);
- **International Organizations** (while FAO will be the lead organization collaboration will be sought with IMO, UNEP, UNDP, World Bank and IDB)
- **Civil society Organizations** (TNC, CARIBSAVE, CNFO and national level and primary fisherfolk and aquaculturists organizations, as well as national level environment NGOs)
- **Private sector** (fisherfolk, aquaculturists, fish processors, recreational fisheries companies, telecom, tourism, etc.)
- **Academia and research** (CERMES/UWI as well as national level vocational schools and institutes in the participating countries)

PPG resources will be utilized to engage all key stakeholders listed above during the project design phase. In alignment with the approved project objective, a comprehensive stakeholder analysis will be conducted (based on preliminary work carried out in the development process of the FAO/CRFM/ WECAFC/CDEMA/CCCCC “Strategy and Action Plan for disaster risk management and climate change adaptation in fisheries and aquaculture in the CARICOM region”) to determine fisherfolk and aquaculturists needs vis-à-vis adaptation to potential climate change impacts, the effectiveness of current response mechanisms, barriers to adaptation,



expertise that might be helpful in designing the implementation of the project and those who may have been involved in similar initiatives or planning processes in the past in the region and elsewhere.

The PPG phase will also allow the project to further increase involvement of civil society organizations and NGOs active at national level in the participating countries in the project design and increase their collaboration, buy-in and commitment to the project in support of the implementation of the project. A combined approach of two regional workshops (inception and project document finalization) and national consultations will be used to identify and involve the relevant stakeholders. While at national level the fisheries administrations in the project countries will take coordinating role in the design phase, this may change if necessary in the implementation phase. FAO, in close cooperation with WECAFC and CERMES, will coordinate the regional workshops in the PPG phase.

The representation of women, youth and other vulnerable groups will be emphasized when selecting participants in project activities, as well as in project staffing; a gender sensitive approach will be adopted by the project throughout its life cycle. At the PPG phase the mechanism for project coordination, implementation, monitoring and evaluation will be discussed in detail and agreed upon. A sound mechanism will be established with a Project Steering Committee, which will involve the national governments and representatives of all stakeholder groups listed above. A logical framework approach will be used to clarify project related responsibilities and obligations for each of the project stakeholder groups/partners.

**A.3 Risks. Indicate risks, including climate change risks, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the project design (Table format acceptable).**

The main risks that might prevent the Project objectives being achieved are (1) low commitment of selected partner institutions and government ministries, (2) poor coordination between the various components of the project, (3) limited interest and engagement of the fishers, and (4) faster climate change shocks than anticipated. To mitigate against these risks the lessons learnt from previous GEF regional/national projects will be taken on board. This will involve the creation of a Steering Committee at the project preparation phase to ensure participation, ownership and engagement of the key partners. It will also involve the acceptance and clear understanding of the roles and obligations of all the various partners involved in the project and an agreement to comply with the monitoring and evaluation schedule. The engagement of the fishers will be ensured by using established forums and participatory processes, and by providing outputs that meet locally-driven needs and interests. The innovative technologies and management tools developed in the Project will be designed in close consultation with the fishers and will use simple, accessible and affordable devices, methods, equipment and other gears.

Main risks	Level of risk	Mitigation measures incorporated in project concept
Low commitment of selected partner institutions and government ministries	Low	The establishment of a project Steering Committee at the project preparation phase will ensure participation, ownership and engagement of the key partners. Moreover, FAO has extensive experiences in working with the partners in the region and has FAO representations and/ or national correspondents' offices in each of the countries to facilitate implementation.
Poor coordination between the various components of the project	Low	The Steering Committee will meet at least twice per year to ensure proper coordination. Moreover, the project management unit will give particular attention to coordination issues and will ensure follow-up at national and regional level.
Limited interest and	Medium	Careful attention will be given to ensure involvement

engagement of the fishers		of all relevant stakeholders (including fisherfolk) at an early stage in the preparation phase and throughout the project implementation process. In fact their representatives have participated in the development of this PIF. Capacity building and training of fishers will take place as much as possible in evening hours and in the low season to avoid them missing fishing opportunities.
Climate change induced events, such as shifts in stock abundance, occur faster than anticipated and the project is able to adapt to	Medium	The capacity building activities foreseen under the project will be initiated in the first year. Climate change adaptive fisheries management planning will ensure from the start of the project that adaptive approaches are used that meet the dynamics, changes and variability of the climate and prepare the fisherfolk for these.
Uncertainty in findings and conclusions from Climate Change science and its fisheries specific links reduce implementation of adaptation measures by the fisheries sector	Medium	The science-management interface is well-integrated in the project design and implementation, particularly in component 1. A range of communication and information strategies will be used to ensure that adaptation solutions supported by scientific evidence will reach the target stakeholders.
Technology uptake by fishers, aquaculturists and fisheries administrations is low	Low	Elsewhere proven and properly tested technologies will be introduced in the region; the technologies will be simple, cheap, durable and practical in order to facilitate rapid uptake also by persons with limited formal education.

#### **A.4 Coordination. Outline the coordination with other relevant GEF financed and other initiatives.**

The Project is designed to complement and add-value to several on-going projects in the region including the GEF Caribbean Large Marine Ecosystem Project (CLME-GEF) (GEF ID:1032) and the implementation of certain components of its Strategic Action Programme (SAP). The latter is foreseen to be supported by the GEF International Waters project “Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems (CMLE+)” (GEF ID: 5542). The project will also coordinate its activities with GEF project on “Sustainable management of bycatch in Latin America and Caribbean trawl fisheries” (REBYC-II LAC) (GEF ID: 5304), in which 6 countries will participate, including Trinidad and Tobago.

The project further builds on the findings and outcomes of the FAO-CRFM-WECAFC-CDEMA project on the formulation of a strategy, action plan and programme proposal on disaster risk management, climate change adaptation in fisheries and aquaculture in the CARICOM region.

Other relevant regional projects include: the Regional Master Plan for Sustainable Development of Coastal Fisheries Resources in the Region (CRFM/ CARICOM); Future of Reefs in a Changing Environment (FORCE-CERMES; Climate Change, Coastal Community Enterprises, Adaptation, Resilience And Knowledge (“CCCEARK” – CARIBSAVE); The Caribbean Fish Sanctuary Partnership Initiative (C-Fish - CARIBSAVE/CCCCC); The Climate and Development Knowledge Network CARICOM Research Programme (CARIBSAVE / CDKN/ CCCCC); the FAO/CNFO and ACPFish II/CANARI/CNFO work on the promotion of the Ecosystem Approach to Fisheries among fisherfolk organizations in the Caribbean and the FAO/WECAFC/CRFM “Review of current fisheries management performance and conservation measures in the Western Central Atlantic region”.

The project will be coordinated by the WECAFC (as lead executing agency) with the assistance of FAO as GEF implementing agency. Collectively with the other executing partners, including the Caribbean Regional Fisheries Mechanism (CRFM), Caribbean Network of Fisherfolk Organizations (CNFO), University of the

West Indies (UWI), fisheries and environment agencies and ministries in participating countries, private sector, CARIBSAVE and TNC, WECAFC and FAO will ensure the project to be carried out as agreed at regional and national level in the 7 countries. Both organizations are already involved in the above mentioned initiatives and projects and have strong historical linkages with most of the partners. These linkages will greatly facilitate coordination and partnership development.

The Project will support the above mentioned project and other projects across the different focal areas by integrating climate risk reduction measures into key economic areas which directly complement poverty reduction and economic development efforts. By developing adaptive capacity at the national, local, and regional levels, the Project will serve to catalyze country-level engagements and investments that address climate concerns in key sectors such as agriculture, water, and coastal development.

During the PPG phase, in-depth consultations will be undertaken to establish partnerships and practical modalities for linking and collaborating with the above on-going initiatives so that duplication and overlap is avoided, joint activities are determined, and that SCCF resources build on the progress and achievements made to date through such projects and initiatives. A strategy and plan for collaboration with relevant on-going and planned initiatives and projects will be prepared during the preparatory phase, including defining the roles and responsibilities of critical stakeholders. Moreover a formal coordination mechanism will be established in the form of a project Steering Committee involving the implementing and executing organizations and partner agencies involved. Respective roles of each agency will be clearly defined. Preliminary discussions between the agencies involved have been held.

## **B. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:**

### **B.1 National strategies and plans or reports and assessments under the relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NCSAs, NIPs, PRSPs, Biennial Update Reports, etc.**

The project is consistent with the national communications of the partner countries, which all mention the vulnerability of their fisheries sector and fishing communities to the projected impacts of climate change. Particular mention is made of the urgent need to address climate related risk reduction activities.

*Antigua and Barbuda's* Second National Communication on Climate Change (2009) lists the fisheries sector among its priority areas for intervention. The project is in line with the priorities for adaptation and risk reduction and will address many of the fisheries sector and climate change adaptation related research gaps identified in this 2<sup>nd</sup> national communication.

*Dominica's* Second National Communication on Climate Change (2012) contains a separate chapter on Fisheries Vulnerability and Adaptation to Climate Change. Recommendations for action include: Measures for enhancing the sustainability of fisheries ecosystems, strengthening the capacity of fishers to meet the challenges presented by climate change, and to promote international action to reduce climate change impacts on the atmosphere and oceans. As such the project will significantly contribute to addressing these recommendations. The project will also contribute to the implementation of the Agricultural Disaster Risk Management Plan and Plan of Action (2012) of Dominica.

*Grenada's* Initial Communication to the UNFCCC (2000) recognizes that very limited information is available on climate change impacts on fisheries and that further research is needed. While identifying the needs not much detail is provided however on the specific strategies to follow for climate change adaptation in the fisheries sector. The current project is however consistent with the Governments' priorities.

*St. Kitts-Nevis* Initial National Communication (2001) refers to the importance of fisheries management for the maintenance of habitats and aquatic biodiversity of coastal reefs ecosystems. The communication recognizes that the fisheries sector in St Kitts and Nevis is vulnerable to climate change impacts. It is largely artisanal and exploits near-shore fisheries, including lobster and conch for local and export markets. It is also an important source of employment and nutrition. These fisheries resources are also likely to be impacted by climate change. The potential negative impacts will occur on the principal fisheries habitats such as mangroves and coral reefs as a result of increasing sea temperatures, shifts in tidal patterns, intensified hurricane activity and sea-level rise. In many instances, these will place additional stresses on fisheries that are already stressed from over-fishing and habitat loss.

The Second National Communication on Climate Change for *St Lucia* (2012) reports on the damage done to the sector by various hurricanes and storms, identifies a need for alternative technology development in the sector to address climate change, recognizes the limited technical capacity to deal with climate change adaptation in the sector and proposes interventions in the field of research, capacity building, awareness raising, institutional strengthening etc. This project is therefore fully in-line with this recent 2<sup>nd</sup> communication and its priorities.

*St. Vincent and the Grenadines* Initial National Communication (2001) recognizes that the fisheries sector, being the second largest source of employment in the Grenadines, could suffer from climatic variations and changes. It further notes that fisheries resources face serious threats from climate-change-associated impacts. Sea-level rise and increased ocean temperatures coupled with marine pollution will have substantial impact on the coral-reef system, mangroves, and seagrass beds, which are the major nurseries of the fishing industry. As for the other participating countries, the project also contributes to the national priorities and strategies for climate change resilience and adaptation. .

The Initial National communication of *Trinidad and Tobago* (2001) gives attention to the impact of hurricanes and floods on the coastal areas and presents various scenarios for potential climate change impacts on the economy. The fisheries sector is listed among the coastal and marine resources that are very vulnerable to climatic changes and climate variability. The role of the sector in terms of provision of food security to the population is emphasized. The project will contribute to the institutional strengthening of key institutions that deal with vulnerable groups in society as well as to securing food available and nutrition for the population and as such it will contribute to the objectives set by the Government in terms of climate change adaptation.

Dominica, Grenada, Saint Lucia and St. Vincent and the Grenadines have all been selected to participate in the Pilot Program for Climate Resilience (PPCR) of the Climate Investment Fund and have either developed or are developing their Strategic Programs for Climate Resilience (SPCR). Data availability and data management, public awareness and sensitization, and the need for integrated planning in a number of sectors including coastal and marine resources are priorities identified in the first phase of the PPCR. Moreover, the project will be able to contribute to the Regional Framework for Achieving Development Resilient to Climate Change, approved by the CARICOM countries (including those participating in this project) in 2009, and which implementation is also supported by the Caribbean Community Climate Change Centre (CCCC).

## **B.2 GEF focal areas and/or fund(s) strategies, eligibility criteria and priorities**

The project is consistent with the “Strategy on adaptation to Climate Change for the least developed countries (LDCF) and the Special Climate Change Fund (SCCF)”. In particular, the proposed project is fully in line with the SCCF Objective 1 to “Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level”. National and regional level technical staff and fisherfolk organizations will be assisted with the development and implementation of adaptation interventions in their national fisheries sector policy and strategy frameworks and legal frameworks (CCA- Outcome 1.1). The project will also provide for introduction of climate resilient fisheries and aquaculture practices to sustain and increase food security objectives in the Eastern Caribbean Region (CCA-Outcome 1.2).

The proposed project also contributes to SCCF Objective 2: Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level”. Risk and vulnerability assessments of the fisheries and aquaculture sector will be conducted and models will be developed to increase knowledge and understanding of climate variability and change-induced risks and for early warning. Practical tools and measures will be provided that will assist the fishers to reduce their vulnerability to climate change and climate variability, increase safety at sea and decrease fishers mortality due to hurricanes and other natural disasters (CCA –Outcomes 2.1 and 2.3). Regional level stakeholders, such as CRFM, WECAFC and CNFO, will be provided with sufficient competent capacity to respond in terms of fisheries management assistance to the changing circumstances.

Finally, related expected outcomes include the successful demonstration of relevant adaptation technology in vulnerable areas facing an increased likelihood of climate induced disaster risks (SCCF focal area Objective 3-

Outcome 3.1) and (Outcome 3.2) an enhanced enabling environment to support adaptation-related technology transfer. The latter is particularly important to generate sustained benefits from the project in the aquaculture sector through production technology transfers and in the fisheries sector through adoption of long-term, tested and proven, applications that will increase resilience in fishers communities, improve safety at sea for fishers, and reduce accidents and loss of life in a sector which is highly vulnerable to disasters.

**Country ownership:** The participating countries have ratified respectively the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol in the following years: Antigua and Barbuda (1993 and 1998), Dominica (1993 and 2005), Grenada (1994 and 2002), St Kitts and Nevis (1993 and 2008), St Lucia (1993 and 2003), St Vincent and the Grenadines (1996 and 2004) and Trinidad and Tobago (1994 and 1999). They are all classified as non-annex I parties to the convention. The countries are not classified among the least developed countries and therefore did not produce NAPAs.

The project concept, this PIF and a PPG, have been prepared over the period October 2011 to December 2012 in a participatory manner, ensuring ownership of the process and outcome in the participating countries. The PIF was submitted informally to the GEF SEC for review in January 2013 and this updated PIF (using the latest format) was prepared in September 2013. The project is in conformity with the national level priorities, programmes and policies. A survey was conducted to identify the main common priorities and the draft PIF have been discussed through e-mail and at two regional events (in Panama, February 2012, and Jamaica, December 2012) in which representatives from each of the participating countries and the regional partners joined.

The project satisfies the eligibility criteria and priorities of the SCCF in that; (a) it is based on country-driven priorities for reducing vulnerability to climate change; (b) it targets sustainable development strategies for improving the management of fisheries, coastal zones and fragile ecosystems - priority objectives for the SCCF; (c) it will leverage additional co-financing resources from bilateral and other multilateral donors; and (d) is cost-effective. The project will build human and institutional capacity for planning and management and develop innovative technological solutions for sharing knowledge and reducing vulnerability to climate change related risks that affect the fisheries and aquaculture sector. It will expand/replicate successful local initiatives and models. The project recognizes the link between adaptation, disaster risk management and poverty reduction and is designed with a focus on building resilience at the community level.

The project also is in line with the Rio +20 declaration “the future we want”, and the related UNGA resolution (66/228) which (in para 178) reaffirms that small island developing States remain a special case for sustainable development in view of their unique and particular vulnerabilities, including their small size, remoteness, narrow resource and export base, and exposure to global environmental challenges and external economic shocks, including to a large range of impacts from climate change and potentially more frequent and intense natural disasters. Notes with concern that the outcome of the five-year review of the Mauritius Strategy concluded that small island developing States have made less progress than most other groupings, or even regressed, in economic terms, especially in terms of poverty reduction and debt sustainability. Sea-level rise and other adverse impacts of climate change continue to pose a significant risk to small island developing States and their efforts to achieve sustainable development and, for many, represent the gravest of threats to their survival and viability, including for some through the loss of territory. Also remains concerned that, while small island developing States have progressed in the areas of gender, health, education and the environment, their overall progress towards achieving the Millennium Development Goals has been uneven. The same resolution stresses “the crucial role of healthy marine ecosystems, sustainable fisheries and sustainable aquaculture for food security and nutrition and in providing for the livelihoods of millions of people (para 113).

The project further contributes to the implementation of some of the key points of the Barbados Program of Action (1994).

### **B.3 The GEF Agency’s comparative advantage for implementing the project**

The project is aligned with FAO’s comparative advantages in the areas of capacity building, providing technical analysis and assessments in relevant technical areas such fisheries and aquaculture, as well as in

areas of fisheries policy, planning and management support and the conservation of marine resources and aquatic biodiversity. The experience of FAO in climate change adaptation in the fisheries sector includes numerous studies and assessments carried out world-wide, reflected in a large quantity of publications. Moreover climate change issues are a recurrent item on the agenda of the FAO Committee on Fisheries meetings.

FAO has considerable technical experience and many field projects in a number of areas covered under this project (fisherfolk organization, fisheries management, policy development, fisheries assessments, aquaculture development, as well as food security, disaster risk management, capacity building, development of community based capabilities and fisheries development and conservation). FAO is also implementing the Ecosystem Approach to Fisheries (EAF) and actively promotes the implementation of the globally accepted 1995 Code of Conduct for Responsible Fisheries.

FAO, through its Sub-regional Office for the Caribbean (SLC), which is located in Barbados and also hosts the Secretariat of the WECAFC, has the capacity regionally available to provide the necessary services to this project. A team of 35 international and regional staff with backgrounds in fisheries, food security, land and water management, forestry, agriculture, programme management etc. is ready to support the project. Moreover, at regional level two more fisheries and aquaculture staff (in Panama and Chile) are available to provide technical assistance, while senior technical officers from FAO headquarters stand ready to provide additional technical and policy assistance services in the project implementation. A FAO project Task Force will be set up to support the project implementation and the project will also have the support and oversight from the FAO-GEF Coordination Unit in FAO headquarters in Rome.

The SLC office has a significant portfolio with a delivery of over 3 million USD in technical assistance and capacity building projects annually, to which could be added the portfolio of national FAO representation Offices in the Caribbean sub-region. The long-standing relationship with the government entities in the 7 countries targeted in this project will facilitate project implementation. The Country Programming Framework (CPF) agreements between FAO and the 7 countries reflect the importance of climate change adaptation interventions in the work with these countries.

Moreover, relationships between FAO and regional partner agencies, such as the CARICOM Secretariat, CRFM, OECS Secretariat, CDEMA, IICA, CCCCC, UN agencies (UNDP, UNEP, PAHO) etc. is well-developed, which is reflected in the numerous joint activities. In each of the project target countries FAO has a national representation or a national correspondents' office, which is able to support national level implementation. Climate change and fisheries management expertise will be brought in by senior technical officers from FAO headquarters services and by partners in the project implementation. FAO's network of global Senior Technical Officers provides additional technical oversight and leadership helping to ensure that programmes at country and sub-regional level achieve maximum policy impact. Partners that participated in project formulation have shown to be able to provide the high quality technical assistance in those areas where FAO does not have directly available technical capacity.

**PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)**

**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):** (Please attach the [Operational Focal Points endorsement letter\(s\)](#) with this template. For SGP, use this [OFP endorsement letter](#)).

<b>NAME</b>	<b>POSITION</b>	<b>MINISTRY</b>	<b>DATE (MM/DD/YYYY)</b>
Timothy N.J. Anthoine (Grenada)	GEF Operational Focal Point and Permanent Secretary	Ministry of Finance, Planning, Economy, Energy and Cooperatives	04/25/2012 (updated letter received on 18 October 2013)
Gayatri Badri Maharaj (Trinidad and Tobago)	GEF Operational Focal Point	Environmental Management Authority	Original letter (04/20/2012 by Ms Veronica Belgrave) (updated letter received on 24 October 2013)
Lavern Queeley (St Kitts and Nevis)	GEF Operational Focal Point	Ministry of Sustainable Development	08/08/2012 (updated letter received on 18 October 2013)
Diann Black Layne (Antigua and Barbuda)	GEF Operational Focal Point	Ministry of Agriculture, Lands, Housing and Environment	09/10/2012 (updated letter received on 12 October 2013)
Caroline Eugene (St Lucia)	GEF Operational Focal Point	Ministry of Sustainable Development, Energy, Science and Technology	09/17/2012 (updated letter received on 25 October 2013)
Lloyd Pascal (Dominica)	GEF Operational Focal Point	Ministry of Environment, Natural Resources, Physical Planning And Fisheries	09/19/2012 (updated letter received on 10 October 2013)
Yasa Belmar (St Vincent and the Grenadines)	GEF Operational Focal Point	Ministry of Health, Wellness and the Environment	Original letter (09/18/2012, David Latchman) (updated letter received on 11 October 2013)

**B. GEF AGENCY(IES) CERTIFICATION**

<b>This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for project identification and preparation.</b>					
<b>Agency Coordinator, Agency name</b>	<b>Signature</b>	<b>Date (MM/DD/Y YYY)</b>	<b>Project Contact Person</b>	<b>Telephone</b>	<b>Email Address</b>
Gustavo Merino, Director, Investment Centre Division Technical Cooperation Department FAO Viale delle Terme di Caracalla 00153, Rome, Italy		January 24, 2014	Raymon van Anrooy FAO Subregional Fishery and Aquaculture Officer, UN House, Marine Gardens, Christ Church, BB11000, Barbados, W.I.	+1(246) 230- 1741	<a href="mailto:Raymon.vanAnrooy@fao.org">Raymon.vanAnrooy@fao.org</a>
Barbara Cooney FAO GEF Coordinator Email: <a href="mailto:Barbara.Cooney@fao.org">Barbara.Cooney@fao.org</a> Tel: +3906 5705 5478					



## Annex I – List of Acronyms used in the PIF

ACP	African, Caribbean and Pacific Group of States
CANARI	Caribbean Natural Resources Institute
CARICOM	Caribbean Community
CBO	Community-Based Organization
CCA	Climate Change Adaptation
CCCCC	Caribbean Community Climate Change Centre
CCRF	Code of Conduct for Responsible Fisheries
CDEMA	Caribbean Disaster and Emergency Management Agency
CERMES	Centre for Resource Management and Environmental Studies
CLME	Caribbean Large Marine Ecosystem (Project)
CBFO	Caribbean Network of Fisherfolk Organizations
CRFM	Caribbean Regional Fisheries Mechanism
DRM	Disaster Risk Management
EAF	Ecosystem approach to fisheries
FAO	Food and Agriculture Organization of the United Nations
GCFI	Gulf and Caribbean Fisheries Institute
GEF	Global Environment Facility
GPS	Global Positioning System
ICT	Information and Communication Technology
IICA	Inter American Institute for Cooperation in agriculture
IPCC	Intergovernmental Panel on Climate Change
MARSIS	Marine Resource and Space-use Information System (project)
NGO	Non-governmental Organization
OECS	Organization of Eastern Caribbean States
SIDS	Small Island Developing States
TNC	The Nature Conservancy
UNFCCC	United Nations Framework Convention on Climate Change
UWI	University of the West Indies
VHF	Very High Frequency (radio)
WECAFC	Western Central Atlantic Fishery Commission
WRI	World Resources Institute

## **ANNEX II to the PIF: Baseline Projects**

The proposed GEF Project builds on an extensive range of baseline projects and initiatives that are being undertaken by international, regional and national organizations and institutions.

The potential of these projects and initiatives to contribute to the objectives of this Climate Change Adaptation in the Eastern Caribbean Fisheries Sector project is substantial. The identified root causes for climate change and variability related problems in the fisheries sector of the region including (i) insufficient awareness and involvement of fishers and fisheries decision makers; (ii) inadequate understanding and access to data and information/knowledge on climate change impacts and adaptation measures for the sector; (iii) limited human and financial resources available in the Eastern Caribbean SIDS; (iv) inadequate national level fisheries and aquaculture governance; and (v) limited regional level cooperation on climate change adaptation in the fisheries sector in the Caribbean, however requires a coordinated approach in order to achieve the objectives, a role which this project can fulfill.

### **Projects and initiatives that relate to Component 1**

The Grenadines **Marine Resource and Space-use Information System (MarSIS)** is a Participatory Geographic Information System (PGIS) for the transboundary Grenadine island chain. Developing the MarSIS database was part of PhD research at CERMES-UWI. It spatially integrates social, economic and environmental information drawn from both scientific and local knowledge into a single information system with a user-friendly interface suitable for most stakeholders and uses. Areas important for livelihoods and conservation can be better identified and MarSIS used to assist the management and planning of sustainable development across the Grenadine island chain. MarSIS was operational from 2006-2012 with financing from a variety of sources. External funders included the US National Oceanic and Atmospheric Administration, the Global Environment Facility Small Grants Program and The Nature Conservancy. There was very significant in-kind funding from government, NGOs and the private sector. Estimated total funding over the 6-year period was over US\$150,000. MarSIS geographic scope is the Grenadine island chain of Grenada and St. Vincent and the Grenadines.

### **Projects and initiatives that relate to Component 2**

#### **mFisheries**

This was an initiative of UWI Department of Electrical and Computer Engineering focused on small-scale fishing in Trinidad and Tobago. The aim was to examine the potential of mobile technology to enable social and economic development. This ICT project included mobile application needs assessment, design, developing apps, deployment and evaluation. Apps addressed fish marketing, safety at sea, first aid, location and information services, camera for monitoring, SMS for governance (voting). The mFisheries research project was extended to two and a half years (2009-2012). It was largely based on a grant from IDRC of Canada with in-kind contributions from UWI and its partners. Its coverage, as a pilot project, was limited to Trinidad and Tobago, but the mFisheries team has determined that there is strong regional ICT demand. The mFisheries project won the 2012 FRIDA award recognizing innovative ICT. The UWI team continued to seek funding for expanding the work into new areas of demand and regionally, further building on the newest technology in smart phones and Apps. A demonstration meeting with fisherfolk leaders from 17 CRFM countries, CNFO, CANARI and CERMES, held in August 2013, further confirmed the demand and the potential of fisheries ICT. Once national partners are available, such as in this GEF SCCF project, the ICT can be scaled up to any extent.

#### **Programmes for Safety At Sea**

National fisheries authorities run programs for Safety of Life at Sea (SOLAS) from their annual budgets that vary much by country. The activities (some patterned after IMO convention provisions for small fishing vessels) are of indefinite duration but with an annual period of intensity that is demand driven by the fishing industry for training in the low season. Coverage is national but collectively regional. Some countries such as Grenada also incorporate a vessel monitoring system (VMS). Mobile ICT that ranges from cell phones to iPads is gaining traction among fishers. Caribbean fishers have proven highly innovative on their own regarding both vessels and gear. FAO, GEF and partners can enhance this and the ongoing programs by providing information from projects and programs in other parts of the world on safety, certification training

and new technologies for small vessels. The Caribbean participants can scale these up across the region with site-specific adaptation.

Together with the International Maritime Organization (IMO), International Labour Organization (ILO) and many other partners FAO has prepared safety recommendations for vessels and Safety practices related to small fishing vessel stability, and carried out numerous capacity building events in recent years. These programmes will continue at global level and the project will aim to bring these global experiences to the Eastern Caribbean and build on the global knowledge base of these organizations. The global programme is ongoing and has an annual budget from FAO of over 200 000 USD.

### **Projects and initiatives that relate to Component 3**

#### **Caribbean Network of Fisherfolk Organisations (CNFO)**

The CRFM, ACP-EU Technical Centre for Agricultural and Rural Coordination (CTA), UWI-CERMES, CANARI, FAO and other partners have been working together with fisherfolk groups to support the Caribbean Network of Fisherfolk Organisations (CNFO). The CNFO was formed in 2007 with a mission: To improve the quality of life for fisherfolk and develop sustainable and profitable industry through networking, representation and capacity building. Since then the CNFO has become a major partner in several fisheries projects in the CARICOM region and the key means of fisherfolk participation. The first phase of the CRFM-led process from 2006 to 2009 included: identifying the potential for CNFO; establishing and formalizing national fisherfolk organizations as the backbone of the regional network; training fisherfolk leaders in areas related to network management, use of communication tools and advocacy work. A second phase from 2012 and ongoing focuses on assisting the CNFO to better participate in policy decisions and to influence policy. Funding for these is in the order of 110 000 and 70 000 euros respectively. The coverage is all 17 CRFM Member States. The planned transboundary network design of the CNFO is innovative, arising out of a collaborative planning process with fisherfolk leaders combined with network research by UWI and CRFM. It is designed for organizational resilience and to match ecological and social scope to address resources and livelihoods. The CNFO proved to be sustainable over gaps in external funding and its several partners are deeply committed. It already covers more than the eastern Caribbean and scaling up for links to the French and Spanish-speaking Caribbean is in progress.

#### **Fisheries for Fishers Initiative of the Gulf and Caribbean Fisheries Institute (GCFI)**

The GCFI Fisheries for Fishers (F4F) Initiative has the vision of “Healthy marine ecosystems that have sustainable fisheries which use best fishing practices, managed within an ecosystem approach to fisheries that results in regionally well-organized fishers enjoying a good standard of living”. Its aims and activities include an annual award to a conservation-minded fisherfolk leader from the Wider Caribbean Region, establishing a fisher ambassador program to develop leadership skills from male and female fisher role models, supporting exchanges for sharing sustainable best practices within and among fisheries, sharing data and information on the ecosystems approach to fisheries, and developing capacities among fishers for engaging in fisheries policy, research, management. The F4F initiative, since 2009, has been financed on an ad hoc basis by various partners of GCFI, including also FAO, and has a budget of approximately US\$60,000 per year. It is an ongoing program with a focus on fisher events at the GCFI annual meeting such as strategic planning, field trips, workshops, oral presentations and interaction with scientists. Several of the events have focused on climate change. The Wider Caribbean is covered, including all 7 countries participating in this project. F4F is the only initiative in the region that presents a well-recognized award to leading fisherfolk role models and works to share practical information to network fishers across language and other barriers. GCFI is in its 67th year and the F4F is now a key permanent feature. In terms of project collaboration with this F4F initiative, there is scope for joint exchange programmes that incorporate and focus on climate change adaptation initiatives in the Wider Caribbean Region.

### **Projects and initiatives that relate to Component 4**

The FAO/CRFM-WECAFC “**Review of Current Fisheries management Performance and Conservation Measures in the WECAFC Region**”, incorporates **16 countries, including also** Antigua and Barbuda, Dominica, St. Kitts and Nevis, St. Lucia and Trinidad and Tobago. The review study is ongoing (2013) and a report will be presented to the 15<sup>th</sup> WECAFC session (March 2014). The study aims to provide an overview of the status of fisheries management in the region and its findings include suggestions and recommendations for improving fisheries management regimes in the region with great attention to the effects of climate change and variability. FAO financed this study in 2012-2013 with USD 30 000 and its is

planned that the study be succeeded by a similar review of legal measures used in fisheries management. The project will likely benefit from the research undertaken and can take advantage of the recommendations and lessons learned.

The **IDB/FAO project “Investing in ecosystem-based shrimp and groundfish fisheries management of the Guianas -Brazil Shelf”**, which is financed by Inter-American Development Bank (IDB) under its Biodiversity Platform for Latin America and the Caribbean. The funding of 75 000 USD in 2014 and 2015 will be expected to contribute, amongst others to Initiate an ecosystem-based shrimp and groundfish fisheries management of the Guianas -Brazil Shelf planning process and development of an investment case in support of the sub-regional management. This GEF SCCF project will exchange experiences with the IDB funded project and ensure that climate change aspects will be mainstreamed in the management plan for shrimp and groundfish.

## Projects and initiatives that relate to Component 5

### **Aquaculture Network of the Americas (RAA)**

The Aquaculture Network of the Americas (RAA by its Spanish acronym) was formally established in 2012. The Network is supported by a Brazilian government funded FAO Trust Fund Project Activación de los servicios y consolidación de la Red de Acuicultura de las Américas (RAA) (GCP/RLA/190/BRA) with a budget of over 2 million USD. The RAA incorporates currently 13 member countries, including the main aquaculture producers of Latin America. The project is supporting aquaculture extension and demonstration in most of its member countries and recently also financed an aquaponics demonstration facility in Antigua and Barbuda. The project is expected to benefit from the aquaculture expertise available within the RAA. It is anticipated that the RAA, once firmly established, will expand its membership with Caribbean states, including some of the project countries. Interest within the governments of the Eastern Caribbean states in such collaboration on aquaculture development is high at present.

In addition to the above projects the following international and regional organizations are implementing projects that are expected to support the baseline:

- **WECAFC** (Western Central Atlantic Fishery Commission) has been active since 1973 as a Regional Fishery Body of the FAO with a commission representing 33 members. The Commission has the objective to promote the effective conservation, management and development of the living marine resources of the area of competence of the Commission, in accordance with the FAO Code of Conduct for Responsible Fisheries, and address common problems of fisheries management and development faced by Members of the Commission. The 7 countries participating in this GEF SCCF project are all members of WECAFC, which means that management recommendations (although non-binding) issued by the Commission at its biannual sessions will be introduced by all countries in the region; regional harmonization is thus aimed at. WECAFC had climate change as important item in the agenda of the 12<sup>th</sup> session (2012) and it is expected that in 2016 at the 16<sup>th</sup> session Climate Change adaptation will return as topic, presenting findings and recommendations from this GEF SCCF project to the wider Caribbean region.
- **CRFM** (Caribbean Regional Fisheries Mechanism) is an inter-governmental organization with a membership of 17 CARICOM nations. Its mission being to “to promote and facilitate the responsible utilization of the region's fisheries and other aquatic resources for the economic and social benefits of the current and future population of the region”, CRFM is one of the key partners in this project. All 7 participating countries are member of CRFM and following the design of the FAO/CRFM/WECAFC/CDEMA/CCCC “Strategy and Action Plan for disaster risk management and climate change adaptation in fisheries and aquaculture in the CARICOM region” CRFM has incorporated Climate Change adaptation activities into its Strategic plan and annual work plan for 2014.
- **CERMES, UWI**. The University of the West Indies is the main regional tertiary institution for CARICOM countries. Centre for Resource Management and Environmental Studies (CERMES) aims to promote and facilitates sustainable development in the Caribbean. The University has MoUs with CRFM and with the CCCCC for which CERMES is the focal point. CERMES conducts research and outreach on the Ecosystem Approach to fisheries (EAF) and governance and is actively supporting climate change adaptation research in relation to the environment and fisheries sectors. CERMES will be one of the key project partners and has ongoing research collaboration with all 7 countries.

- **CARIBSAVE.** CARIBSAVE is a regional not-for-profit organisation with its Headquarters in Barbados, an office in Jamaica and operational staff across the Caribbean. CARIBSAVE was originally formed in 2007 as a partnership initiative between Caribbean regional organisations and the University of Oxford, before becoming an independent not-for-profit entity.

Projects currently carried out by CARIBSAVE include The Caribbean Fish Sanctuary Partnership Initiative (C-FISH), duration 2012 -2016, financed with USD 3.1 million by the DFID through the CCCCC. In this project Jamaica, St Lucia, Grenada, St Vincent and the Grenadines and Dominica participate. The core objective of the project is to provide financial and technical support for the management of community-based fish sanctuaries. Another project is the Climate Change, Coastal Community Enterprises, Adaptation, Resilience and Knowledge project (CCCCE-ARK) , which has a budget of 2 million USD and is largely funded by the IDB. The duration is from 2012 to 2014 and the project covers Barbados, Bahamas, Belize, Jamaica. This GEF SCCF project will closely collaborate with these projects, which will be ensured by participation of CARIBSAVE in this project. Other current projects of CARIBSAVE to which could be linked are: The Partnership for Canada-Caribbean Community Climate Change Adaptation, (ParCA); Climate Change Vulnerability, Impact And Adaptation Analysis In The Caribbean Region (VIAAC). The latter project is a 200 000 USD research project which conducts a climate change vulnerability, impact and adaptation analysis in water resources, coastal areas, and the tourism sector in the Caribbean and includes also Dominica and Antigua and Barbuda in its analyses.

- **TNC** (The Nature Conservancy) launched the 'Caribbean Challenge Initiative (CCI) in 2008 as the first key conservation initiative embraced by ten governments from the CLME+ region with a 42 M US\$ contribution from the Caribbean Biodiversity Fund (supported by KfW, GEF and TNC) to assist countries conserve at least 20% of their nearshore marine environments in MPAs by 2020 and creating National Conservation Trust Funds, that are further endowed through sustainable financing mechanisms (e.g. tourism fees) to fund park management. The Caribbean Summit of Political and Business Leaders to launch the second phase of the Caribbean Challenge Initiative (CCI) (May 17 – 18, 2013; British Virgin Islands) was successful and TNC is also active with a project called “At the Water’s Edge (AWE)”, which aims to increase Coastal Resilience in Grenada and St. Vincent and the Grenadines and a related LEADERSHIP PROGRAMme. The TNC uses in these projects an Ecosystem-based adaptation (EBA) to climate change in order to reduce the scale and scope of climate change impacts.
- **UNEP CAR-RCU** provides the secretariat of the Cartagena Convention. UNEP has also been involved in the implementation of a number of projects such as IWCAM for Caribbean SIDS and it provides the secretariat for the SPAW Protocol. The latter is of high relevance to the project as climate proof fishery management measures developed and tested by the project could be up- scaled/ disseminated through the SPAW protocol member countries.
- **CDEMA:** The Caribbean Disaster Emergency Management Agency is based in Barbados and most countries in the Caribbean are member. It is part of the CARICOM Regional Programming Framework and makes use of a Comprehensive Disaster Management (CDM). The CDM aims to strengthen regional, national and community level capacity for the mitigation, management and coordinated response to natural and anthropological hazards, and the effects of climate change. The current CDM strategic framework incorporates now the “Strategy and Action Plan for disaster risk management and climate change adaptation in fisheries and aquaculture in the CARICOM region” and CDEMA will be a useful partner of the project in terms of inter-disciplinary communication and management.
- **CCCCC:** The Caribbean Community Climate Change Centre is a CARICOM organization, which was established in 2005. The Centre serves as the key node for information on climate change issues and on the region’s response to managing and adapting to climate change in the Caribbean. The CCCCC is undertaking a number of research projects and activities that are aligned with the “Strategy and Action Plan for disaster risk management and climate change adaptation in fisheries and aquaculture in the CARICOM region” and there are various collaborative activities foreseen during the project implementation phase, particularly in terms of capacity building in coastal communities.